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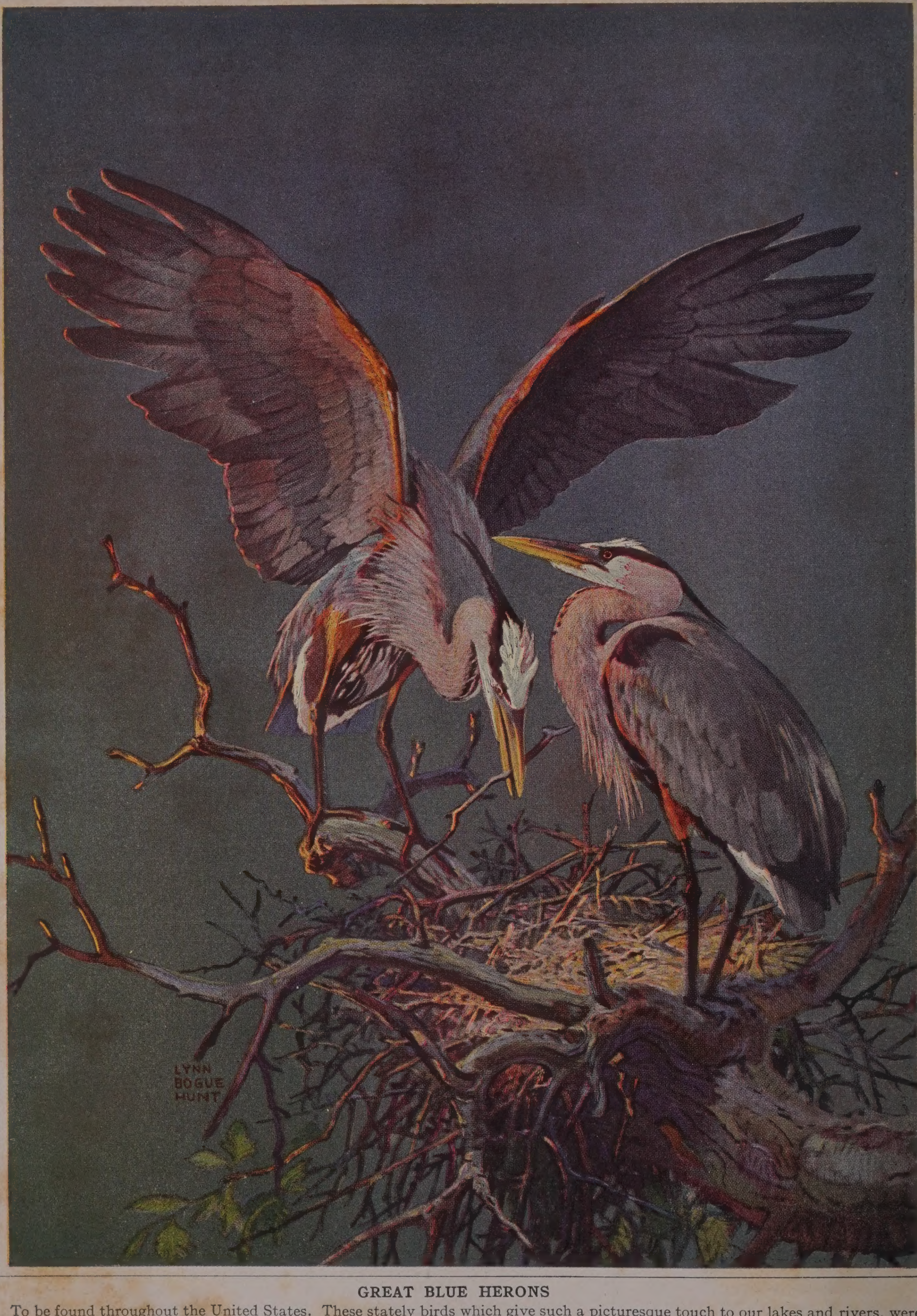


GREAT BLUE HERONS

To be found throughout the United States. These stately birds which give such a picturesque touch to our lakes and rivers, were once shot in large numbers for their plumage, and in some states because they consume more or less small trout. So handsome a bird, however, is more than worth his keep.

Herodotus (*hē-rŏd′ō-tŭs*), a famous Greek historian who is commonly called the "Father of History," was born about 484 B. C. at Halicarnassus, a Greek colony on the shores of Asia Minor. While still a young man Herodotus, disliking the war and dissension which seemed to be sweeping over Greece, set out upon a journey during which he travelled through Egypt, Palestine, and Asia Minor, as far east as Babylon and Susa. He became interested in the factional politics of Halicarnassus, and becoming involved in its intrigues he withdrew first to Athens and later to Thurii, Italy, a Greek colony. It was here that he wrote his famed *History of the World,* a work of nine volumes in which he tells of the wars through which he had passed and of many of the countries he had visited. The writing of Herodotus has been read through the centuries and down to the present day, and is still lauded for its excellent language and unbiased opinions. There is no authentic record that Herodotus lived after 425 B. C. His works have been excellently translated into English by Rawlinson.

Heroin (*hē-rō′ĭn* or *hĕr′ō-ĭn*), a white crystalline substance, $C_{21}H_{23}O_3N$, which is chemically known as diacetyl-morphine. It is an acetyl derivative of morphine. Heroin is an anodyne and sedative and is used chiefly in the treatment of coughs and bronchitis, although its analgesic effect is inferior to that of morphine or codeine. The drug was first introduced in medicine in 1898. To-day its use and sale are regulated by law.

Heron (*hĕr′ŭn*), a long-legged water-bird found all over the world except in the coldest regions. North America is the poorest in species and South America the richest. These birds have a long, loose plumage and, among the ordinary feathers, tracts or patches of downy feathers that break into powder as they grow. The number of these patches of powder-down is used to distinguish the different groups; there are three such patches in the true herons. These birds stand perfectly motionless in the water watching for fish, frogs and other animals which they strike with great swiftness with their long, strong bills. They also at times eat meadow-mice, slugs, snakes and insects, but they never get very plump no matter how abundant their food. They are wary and difficult to approach. The great blue heron, wrongly called blue crane, the largest heron in North America, is a beautiful and very interesting bird. To see one in its native haunt is an event to be remembered. When standing fairly erect, it reaches over three feet in height; with wings closed its general color above is bluish-gray, the under part white with black markings on the side. It has plumes on the head, neck and back. It breeds throughout North America, nesting in large trees in impassable swamps. The smallest heron is the little green heron, quite common in timbered and well-watered regions. The black-crowned night-heron nests in very large colonies. It is a southern bird, but breeds as far north as Massachusetts. As its name suggests, it is abroad at night, and feeds and flies by night. The little blue heron is a southern bird but wanders north in summer.

The plumes of the snowy heron or snowy egret have been its undoing, this wonderfully beautiful bird being another victim to the vanity of women and the greed of milliners. Once very abundant about the everglades of Florida, this bird was hunted by thousands during the nesting season and is now very rare in the United States.

Herrick (*hĕr′ĭk*), **Robert**, an English poet, was born in London in 1591. His father died when young Robert was but an infant. For ten years the lad was bound as an apprentice to his uncle, a goldsmith. In 1613 he was a fellow at St. John's writing to his uncle letters for remittances. He won his degree in 1620 and immediately returned to London. There he became the close friend of Ben Jonson and his jolly acquaintances. In 1629 young Herrick's mother died and he set about taking orders, only to be appointed to a poor living where he bemoaned his fate. He was ejected from his parish as vicar of Dean Prior, Devonshire, by the Long Parliament in 1647. The following year there appeared a collection of his poems in two parts, *Hesperides* and *Noble Numbers.* He was reinstated in the vicarage upon the restoration of Charles II. Among his works are included epigrams, religious poems, and secular poems, the best known of which are the *Mad Maid's Song;* the *Night Piece to Julia,* and *To the Virgins.* Herrick died in October, 1674. His works were revived in the *Gentleman's Magazine,* 1796.

Herrick, Robert Welch, an American college professor and novelist, was born at Cambridge, Massachusetts, in 1868. He was educated at Harvard University from which institution he was graduated in 1890. In that same year he became instructor of rhetoric at the Massachusetts Institute of Technology. In 1893 he became a member of the faculty at the University of Chicago. In 1905 he became professor of English at that institution, and served in that capacity until 1923.

Robert Herrick's novels present scenes from American home life, and the apparent clash between commercialism and idealism. His characters are presented to the reader in a charming manner, displaying the author's power of delineating character and an unusual literary ability. Among his published works are: *Waste* (1924); *Wanderings* (1925), and *Chimes* (1926).

Herrin (*hĕr′ĭn*), a city in Williamson County, Illinois, is situated about ten miles northwest of Marion. It is located in the heart of a rich and extensive coal-mining region. Its principal industrial establishments include foundry and machine shops. In 1930 the population was 9,708.

Herring, a common, small, salt-water fish. It occurs in immense numbers, is easily captured, and is extensively known in the form of smoked herring. There are about 130 species found in all seas. Many forms ascend rivers to spawn. The alewife and the shad belong to the herring family. The name is also given to a fresh-water fish, which resembles the marine herring in form, but belongs to quite a different family, the whitefish family.

The eggs of the herring are tiny and most numerous, and of a heavy and adhesive nature. When shed these eggs quickly adhere to stones and shells found in the sea. The herring usually chooses a hard, rough, and rocky spawning ground. Experiments with the artificial fertilization of the eggs of the herring have been unusually successful.

Herring-bone, resembling the spine of a herring as characterized in architecture by the arrangement of the decorative pattern in rows of parallel lines, in which any two successive rows slope in reverse directions. The herring-bone was a distinctive feature of Byzantine and Romanesque architecture. It is sometimes evidenced in modern architecture. In the textile industry the herring-bone refers to a chevron weave.

Herschel, Caroline Lucretia, a distinguished German-English astronomer and sister of the famous Sir Frederick William Herschel, was born at Hanover in 1750. In 1772 she journeyed to England where she resided with her brother at Bath. After Sir Frederick William Herschel became astronomer to George III, she served as his assistant. During these years she discovered several comets and nebulæ. She was awarded the gold medal of the British Astronomical Society in 1828. Among her published works is a *Catalogue of Stars taken from Mr. Flamsteed's Observations.* In this work she lists 561 stars which were not contained in the British catalogue.

Herschel (*hûr'shĕl*), **Sir Frederick William,** generally known as Sir William Herschel, a distinguished German-English astronomer and natural philosopher was born at Hanover on November 15, 1738. Herschel began his life as a musician. In 1756 he went to England and spent some years at Bath as a teacher of music. Meanwhile, all his spare time was devoted to grinding lenses, making telescopes and studying the heavens. In this work he was aided by his sister, Caroline. In 1781 he discovered a new planet, to which he gave the Latin name of *Georgium Sidus,* but which we now call Uranus. It probably was chiefly due to this discovery that he was called by King George III to be his private astronomer. This enabled him to lay aside his musical profession and devote himself to astronomy. He was permanently established at Slough near Windsor, and there spent the remainder of his life. Some of his more important contributions to science were a series of papers concerning the rotation of the planets and their satellites; the discovery of Uranus; extensive catalogues of double stars; memorable memoirs on the *Motion of the Solar System in Space* (1783-1818); the completion (1789) of his great reflecting telescope of forty feet focal length and four feet aperture; and the discovery of the sixth and seventh satellites of Saturn in 1787 and 1789 respectively.

He was knighted by George III. Sir William Herschel died in England on August 25, 1822.

Herschel, Sir John Frederick William, the illustrious English astronomer, the only son of Sir Frederick William Herschel, was born at Slough, England, on March 7, 1792. He was educated at Cambridge, and in 1820 began his astronomical work, under the guidance of his father. In 1833 appeared his memoirs *On the Investigation of the Orbits of Revolving Double Stars.* To his father's long list of double stars, which he re-examined, he added many more of his own discovering. His next step was a thorough examination of the southern heavens. For this purpose he transported his instruments and family to the Cape of Good Hope in 1834. His *Cape Observations,* published in 1847, include a catalogue of the southern stars and nebulæ, careful drawings and charts, a catalogue of double stars with descriptions of their orbits, etc. Herschel remained four years at the Cape, returning to England in 1838. He later gave considerable attention to the then new science of photography. He was the first to use glass as a support for the sensitive film. To Sir John Herschel we owe the terms "positive" and "negative" as used in photography. Upon his return to England he was made D.C.L. of Oxford. He became a baronet upon the coronation of Queen Victoria. Sir John served as president of the Astronomical Society and in 1849 became master of the Mint. He died on May 11, 1871, and was buried in Westminster Abbey near the grave of Newton.

Herstal (*hĕr'stäl*), or **Heristall** (*ā-rē-stäl'*), a town in the Province of Liége, Belgium, is situated on the River Meuse, about three miles below the city of Liége. Herstal is a prosperous manufacturing and mining town, and an important iron and steel center. Coal is mined in the immediate vicinity. A national arms and cannon factory is located in the town.

Herstal was the birthplace of Pepin, the father of Charles Martel and great-grandfather of Charlemagne. Some ruins of the old castle of Herstal may still be seen.

The population in 1931 was estimated at 23,314.

Hertford (*hûrt'fẽrd*), a county town of Hertfordshire, England, is situated on the Lea about twenty-six miles north of London. A profitable trade is carried on in corn, malt, and flour. Among the many interesting buildings in the town is the old castle of Hertford which was constructed by Edward the Elder in 905. A small part of the castle still stands. The present Hertford castle was erected by William Cecil, the Earl of Salisbury. In 1805-09 the stately edifice was occupied by the East India Company as quarters for the Haileybury College. In 1931 the population was 11,376.

Hertz, Heinrich Rudolf, a brilliant German physicist, was born at Hamburg, on February 22, 1857. Having abandoned his early intention of being an engineer, he entered Berlin University in 1878. Helmholtz, at once recognized the remarkable abilities which he displayed in the line of physics, and immediately assigned him the problem of finding to what extent electricity exhibited inertia. The solution which Hertz found for this problem (1880) is his first important piece of work and led to his appointment as assistant in the physical laboratory at Berlin. In 1885 he accepted the chair of physics in the engineering school at Karlsruhe. It was in this laboratory, in 1888, that he completed his immortal work on the connection between light and electricity. Maxwell, interpreting Faraday had prophesied on purely mathematical grounds that electrical forces are propagated through space according to the same laws and the same speed as light. To prove or disprove by experiment this prediction of Maxwell's was suggested by Helmholtz as a prize question for the Berlin Academy of Sciences. This is the problem which Hertz solved in 1888, thereby confirming Maxwell's views and making it highly probable that light is nothing but electricity in vibration. While at Karlsruhe, he married Elizabeth Doll, a daughter of one of his colleagues. In the spring of 1889 he received a call from the University of Bonn, which he accepted. Here he remained until his too early death. The last monument of his genius is his *Principles of Mechanics,* a volume upon which he worked during the last three years of his life and which was published posthumously. This profound work is understood by very few people. He also wrote *Electric Waves* and *Miscellaneous Papers,* both of which have been translated into English. He proved that electromagnetic waves of comparative slow frequency exist. These waves are called "Hertzian" from their discoverer, who demonstrated that they are propogated through space, and can be refracted, reflected, and polarized. As a practical result of his discoveries, wireless telegraphy was developed. He died at Bonn, on January 1, 1894.

Hervey Islands. See Cook Islands.

Hesiod (*hē'sĭ-ŏd*), one of the earliest Greek didactic poets, was born at Ascra at the foot of Mt. Helicon. His era is that of about 735 B. C. He wrote *Works and Days, Theogony,* and a short epic entitled *Shield of Heracles.*

Hesperides (*hĕs-pĕr'ĭ-dēz*), the name of the sisters who guarded the golden apples given by Gæa to Hera upon her marriage with Zeus. Their genealogy and number are a matter of dispute. The gardens of the Hesperides were thought to be in the far west, on the shore of the ocean. The apples were stolen by Hercules and restored by Athena.

Hesse (*hĕs*), a republic within Germany is separated into two divisions by a strip of narrow land. Both divisions are irregularly shaped, and set into the southwestern corner of the country, just about Pfalz, which separates Hesse from France. The chief rivers are the Rhine, which divides two of its provinces, the Main and the Neckar. Hesse covers a total area of 2,968 square miles, of which 49.9 per cent is under cultivation; 13.5 per cent is in meadow and pasture-land; 31.4 per cent in forests; and only 5.2 per cent uncultivated, which includes the roads and houses. Coal is one of the chief minerals of Hesse 941,375 tons being produced in 1931. Iron is also an important mineral product, 347,857 tons being produced in the same year. Hesse is chiefly agricultural, producing in 1931 the following crops: wheat, 71,419 tons; rye, 80,608 tons; barley, 110,999 tons; oats, 92,222 tons; potatoes, 1,013,804 tons; and 11,473,506 gallons of wine. Cattle, sheep, swine, and goats are the chief livestock. There are manufactures of leather, cloth, paper, chemicals, furniture, wagons, railway cars and carriages, motor cars, machinery, musical instruments, tobacco and cigars.

In 1932, there were 995 public elementary schools with an enrollment of 179,631 pupils and a faculty of 3,562. There are also a number of higher schools, girl's schools and private schools. The University at Giessen is an important institution of higher learning, as is also the Technical High School at Darmstadt.

Hesse was founded in ancient days by a German tribe, and remained independent until acquired by Prussia. Ancient Hesse was divided in 1567 among the four sons of the landgrave, Philip. In 1604 two of the branches became extinct, and Hesse was formed into Hesse-Cassel and Hesse-Darmstadt. It was proclaimed a republic in 1918. Its constitution was adopted in 1919. The population in 1925 was 1,347,279. The largest cities are Mayence (or Mainz), with a population of 130,915; Darmstadt, the capital, 89,465; Offenbach, 79,362; Worms, 47,015, and Giessen, 33,600.

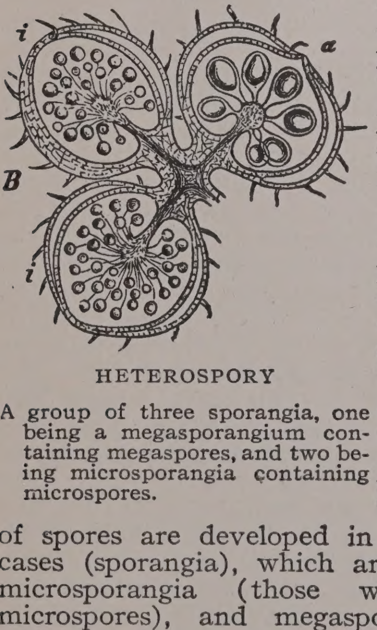
Hessian (*hĕsh'ăn*) **Fly,** a two-winged insect associated in a family with gall-gnats, and the wheat midge. These are minute insects, but their larvæ have caused more extensive damage to the wheat crop than any other insect. The eggs hatch into a very small flattened maggot of a pale red color; these crawl into a joint, near the base of the wheat-stem, just where a leaf fits into the stalk, burrow into the stem, and sap its life and vigor. They pass into a pupa-stage and are known as flax-seeds. There are two or three broods a year. This fly received its name from the belief that they were brought to the United States by the Hessian troops during the War of the Revolution. It has been active ever since Revolutionary days, but some years have been years of especial disaster, such as 1789, 1817, 1846, 1863, 1873, 1876 and some succeeding periods. It is combated by burning the stubble of wheat-fields, as the pupa lives over winter.

Hestia (*hĕs'tĭ-ȧ*), the Greek goddess of the hearth and home. Hestia was the oldest daughter of Cronus and Rhea, and, having been wooed by Poseidon and Apollo, vowed eternal virginity in order to free herself from their suit. She is not mentioned in Homer, and is consequently believed to be of later origin than the rest of the great Grecian deities. She was regarded as the personification of home and private life, as opposed to Hermes who represented business and outdoor life. She is sometimes spoken of as the sacred fire itself, which was kept constantly burning and used to light the hearth-fire of a newly founded colony. It was believed to presage great disaster should this sacred fire of Hestia ever become extinguished.

Het′erocyst (in plants). Among the blue-green algæ (*cyanophyceæ*) certain forms, as nostoc, consist of chains of cells. Here and there in the chain occur cells which are colorless and larger than the ordinary cells, and whose work is not known. These are called heterocysts, a name which simply means other cells.

Heterogamy (*hĕt′ẽr-ŏg′ȧ-mȳ*), a condition in plants in which the sexual cells (gametes) are unlike, that is, they have become distinguishable as male and female and are called sperms and eggs. All but the lowest plants are heterogamous. When heterogamy appears, not only do the gametes differ, but the organs which produce them are unlike, antheridia forming sperms and oögonia or archegonia forming eggs. The contrasting term is homogamy or isogamy, meaning gametes similar.

Heterospory (*he′ter-ŏs′pŏ-rȳ*) (in plants). In the lower plants the numerous asexual spores which each individual produces are usually alike. Among the pteridophytes, however, certain forms (some ferns and club-mosses) produce asexual spores which differ very much in size. The small ones are called microspores, the large ones megaspores. These two kinds of spores are developed in different spore cases (sporangia), which are hence called microsporangia (those which produce microspores), and megasporangia (those which produce megaspores). When the microspores germinate, they produce very small gametophytes which bear only antheridia (male organs) and hence are called male gametophytes. When the megaspores germinate, they produce larger gametophytes, which bear only archegonia (female organs) and hence are called female gametophytes. Heterospory is very important among plants, for its appearance is the first step toward the appearance of seeds. All seed-plants (spermatophytes) are heterosporous. The pollen sacs of flowers are microsporangia, and the pollen grains are microspores. The ovules are megasporangia, and each ovule contains but one megasporangium, which has been called the embryo-sac. The peculiarity about this large solitary megaspore is that it is never discharged by its sporangium (the ovule), but is retained and germinates within the ovule. It is this condition which results in a seed and gives the chief character to seed plants. The contrasting term is homospory or isospory, indicating that the asexual spores are similar. Thallophytes, bryophytes and most pteridophytes are homosporous; some pteridophytes and all spermatophytes are heterosporous. J. M. Coulter.



HETEROSPORY

A group of three sporangia, one being a megasporangium containing megaspores, and two being microsporangia containing microspores.

Hewlett (*hu′let*) **Maurice Henry,** English barrister born in 1861, in London, who received wide recognition as an interpreter of medieval thought. Among his books and stories are: *The Masque of the Dead Florentines, Richard Yea-and-Nay, The Queen's Quair, The Road in Tuscany.*

Hexylresorcinol (*hexyl,* six, *re-sor-cin-ol,* substance resembling carbolic acid), a disinfectant or germ-killer non-poisonous to man. The name is derived from its composition, since to resorcinol is added six groups of fatty acids. When the substances are combined the germ-killing strength is fifty times as great as the deadly carbolic acid, and yet, unlike carbolic acid, the new compound is harmless to persons.

Hezeki′ah ("May Jehovah strengthen him"), a king of Judah, who reigned from 728 to 697 B. C. During this time occurred the invasion of Judea by the Assyrians under Sennacherib, when 180,000 of the Assyrians died in one night. (See *II. Kings* xviii–xx and *II. Chron.* xxix–xxxii.) Hezekiah executed many great works, among them the aqueducts of Jerusalem.

Hiawatha (*hī′ȧ-wa′thȧ*). This well-known poem of Longfellow's was composed in 1855, in the prime of the poet's life, and may be regarded as on the whole his masterpiece. It is based on a legend current among the Iroquois tribes, which deal with a hero known to them as Hiawatha but bearing other names among other Indian peoples. Perhaps no such person existed, but the legend asserts that he sought to unite the ever-warring tribes in a bond of peace and to encourage intercommunication by forest-roads and rivers. The Iroquois themselves were attempting this task when the white men came, so that Hiawatha's splendid efforts and his failure appealed to them. An account of the myth is given in *Algic Researches* (1839) and *The Myth of Hiawatha* (1856) by Schoolcraft. Longfellow took his material from the former work; the delightful, though somewhat monotonous meter as well as the general plan of the poem he borrowed from the ancient epic of Finland, *Kalevala*. But this indebtedness must not blind us to the singular merit of Longfellow's work.

The introduction is a beautiful appeal to the reader to appreciate the simple Indian tale, lay aside racial prejudice and delight in the life of nature in which the story moves. The plan of the story is simple, but at first reading may escape notice. The Indians are to be tested. A prophet will appear among them with power to lead them in a life of peace and industry. If they fail to receive and follow him, they are doomed to extinction. This message the Great Spirit descends from heaven to deliver, having assembled the chiefs of all the tribes. The prophet, Hiawatha, is miraculously born, his father being the west wind. He exhibits his strength in a contest with his father, in which he would revenge the wrong his mother had suffered. Then he gives the Indians of the east the benefits that would enable them to become a single, happy and numerous people. He gives them corn to take the place of hunting, opens the river-courses and forest-paths, with the aid of "the very strong man, Kwasind," and teaches them gentler feelings through the music of his friend, the musician, Chibiabos. He invented the canoe and slew the serpents and the great magician who brought disease and death to men. In his marriage to Minnehaha he united east and west, Iroquois and Dacotah, and by teaching picture-writing he made records possible and treaties and communications between distant places. He gained them relief from expensive honors for the dead. But his enemies were too strong for him; the treacherous ice killed Chibiabos, sloth and sleep slew Kwasind, gambling brought depravity and disunion among his people, famine and cold stole from him his beloved wife. Then the white man's ships were seen, and the black-robed priest landed to preach a new gospel. Hiawatha bade his people always treat the white man as his own guests, and then in his canoe sailed away to the west and was never seen again. For he knew that his mission had failed and must fail.

Besides the charm and power of the narrative, the poem is marked by a sweetness of diction hardly surpassed. The Indian names of common things are exceedingly appropriate and beautiful, and the poet introduces them with great effect. His descriptions of the phenomena of nature are brief and full of life. The very monotony of the verse not only makes the reading easy and rapid, but it renders all the more striking occasional variations,—as: "*clear and limpid from the footprints Of the Master of Life descending*," or, "*speechless in his infinite sorrow*."

Hi'bernation is a torpid state in which certain animals pass the cold months of the winter. It is to be noted that in hot countries there are animals which pass the summer in a similar condition. In such a state animals scarcely breathe; and the presence of life is shown by the action of the heart alone. Thus a hibernating animal may be kept under water unharmed during a period which would normally be more than sufficient to cause its death. The temperature of an hibernating animal is almost that of the things which surround it. Only the muscles seem to gain in excitability; for the lightest touch may excite most abrupt movements. Hibernation perhaps is merely an intense sleep of long duration, for it may exist in all sorts of degrees. Only a few mammals, including bears, skunks, dormice and prairie-dogs, will hibernate; but reptiles do so freely, as do some fishes. Many snails rest entirely in their shells, almost dried up, but protected by layers of membrane from exposure to the air, during the entire duration of summer. Bats not only hibernate, but during the day rest in a sleep akin to hibernation. Hibernating animals consume their own tissues, although slowly; and when they awake it is to a considerable loss of weight and a keen feeling of hunger.

Hick'ory, the species of the genus *Hicoria* formerly called *Carya*, well-known trees of the walnut family. There are about ten species, and all occur in eastern North America. The nuts are mostly edible; but although they have been used ever since the discovery of America, they have never been properly cultivated and improved. The nuts are mostly gathered from wild trees, although lately orchards containing improved varieties have been planted. The common nuts of the market are the pecan (*H. pecan*); the shag-bark hickory (*H. ovata*), with its small nut; and the big shell-bark hickory (*H. laciniosa*), with its large thick-shelled nuts. The pecan-nut is a southern species of hickory found on the border of streams from Iowa and southern Illinois and Indiana to Louisiana and Texas and also in Mississippi and Alabama. Texas provides a large part of the pecans of commerce, but various southern states are now paying attention to the cultivation of the tree. It is the largest of the hickories, rises to a height of from eighty to a hundred feet and above, grows rapidly, its fruit a smooth, thin-shelled brown nut highly valued for its sweetness and flavor.

Hicks-Beach, Rt. Hon. Sir Michael Edwards, Bart., M. P., P. C., D. C. L., English statesman, was born in London, Eng., in 1837, educated at Eton and Christ Church, Oxford, and in 1864 became a member of Parliament. During the first ten years of his political life, when his party (the Conservatives) were out of power, Sir Michael filled subordinate posts, as secretary to the Poor Law Board and Under-Secretary for the Home Department. In 1874, when the Conservatives gained office, he was appointed Chief Secretary for Ireland, and three years later he was admitted to a seat in the cabinet. From 1878 to 1880 he acted as Secretary of State for the Colonies. He went out of office with his party. When Lord Salisbury succeeded to power, in 1885, Sir Michael was appointed Chancellor of the Exchequer and became leader in the House of Commons. He resigned with his party in February, 1886, when Gladstone and the Liberals gained power for a few months, but in August of that year he took office once more under Salisbury, becoming Chief Secretary for Ireland. This post he resigned in March, 1887, when he was succeeded by Balfour. He was president of the Board of Trade from 1888 to 1892. He served a second time as Chancellor of Exchequer (1895 to 1902), and he subsequently acted on various committees of the House and repeatedly acted on important arbitrations. From 1904 to 1906 he was chairman of the Royal Commission on Ecclesiastical Discipline, and in 1908 he became a member of the Ecclesiastical Commission. Nominally, he was a free trader, but favored Balfour's proposals for retaliation. He died in 1916.

Hicksites. See Quakers.

Hides, the commercial term for skins of the larger animals, such as domestic cattle or horses, and of bison, buffaloes, and the large wild animals. The term always means the skin before it has been made into leather. Hides appear as an article of commerce either "green," dried or salted, and are used almost exclusively for manufacturing into leather. The hides of smaller animals, such as sheep, goats, and deer, are known as "skins."

Hieroglyphics (*hī-ĕr-ō-glĭf'ĭks*), the characters in picture writing, in which the figures of objects take the place of the purely conventional signs of more advanced systems of writing. The term is especially used for the writing of the ancient Egyptians; and in America, for Mexican and Indian writing also. Babylonia and China originally had picture-writings, but these were early simplified and conventionalized, thus losing their hieroglyphic nature. Monuments of the Hittites and the early Cretans, as yet undeciphered, are also in hieroglyphics.

Hieroglyphics originated in the lack of an alphabet or any means of writing. A picture made instead of an object formed the first crude attempt at communication. Footsteps pointing toward the east, and three suns, meant a journey eastward, occupying three days' time. Thus the system of writing developed. Gradually the picture, made always the same way, assumed definite and fixed meaning, and came to be a hieroglyph. All alphabets originated in this manner. When the hieroglyphs of the Egyptians were recorded as since discovered, they had gone far toward becoming what we call a written language. It is estimated that the ancient Egyptians used about 1,700 hieroglyphs.

Hieroglyphics are phonetic or ideographic, according to whether they are signs which represent sounds, or signs which represent ideas. Phonetic hieroglyphics date back to 3,800 B. C. The Egyptian words have at the end of each, one or more determinatives, forming a system very similar to that of the Chinese. The language of the hieroglyphs is most nearly represented by the Coptic, which is a name given to the Egyptian language written with the letters of the Greek alphabet and a few signs borrowed from hieroglyphs. This language ceased to be used after the sixteenth century.

The first basis for deciphering hieroglyphs, which were a closed secret long after their discovery in modern times, was found when the Rosetta Stone was discovered in 1779 by a French artillery officer who was building a fort. This was brought to London, and found to be of immense importance, as the decree which it contains was written in three languages—the hieroglyphic, the demotic forms of the hieroglyphs, and Greek. The history of the deciphering of this and other inscriptions is most interesting, as it covers generations and lives of men who thought themselves accomplishing much when they had contributed the meaning of a few signs only. Interesting is the method of deciphering such inscriptions. the Rosetta Stone was discovered in 1799 by "Ptolemy" and "Cleopatra" which appeared on it in all three languages. From them J. F. Champollion deciphered thirteen signs; the name "Alexander" yielded three more, and in this manner the alphabet was slowly discovered. Egyptology is now a recognized branch of Oriental learning, and all the grammatical forms and three-fourths of the words of ancient Egyptian are known.

The hieratic form of hieroglyphics was used for state papers, legal documents, religious books and all ordinary purposes; the demotic, which is much more difficult to decipher, was occasionally used for contracts, public documents, and occasionally for religious formulæ.

The hieroglyphic writing of the Mexicans, or Aztecs of ancient times, used also in Central America by the Mayas, was much less perfect than the hieroglyphs of the Egyptians. The Spanish priests, moreover, thoroughly destroyed the literature so that but a few manuscripts are available. What is left, seems to indicate that the Mexicans were still almost in the pictographic stage, although their pictures were highly conventionalized.

See Archæology.

Higginson, Thomas Wentworth, an American author, essayist and lecturer, was born at

Cambridge, Massachusetts, on December 22, 1823. He was graduated from Harvard in 1841, and ordained for the ministry in the same year. He abandoned this calling in 1858. He was an active anti-slavery agitator. In the Civil War he commanded the first regiment formed of freed slaves. He was wounded in 1863. After the close of the War, he devoted himself to literature, education, and the political rights of women. He died on May 9, 1911. Among his more important works are: *Outdoor Papers* (1863); *Army Life in a Black Regiment* (1870); *Atlantic Essays* (1871); *Short Studies of American Authors* (1879); *Common Sense about Women* (1881); *Life of Margaret Fuller Ossoli* (1884), and *Larger History of the United States* (1885). He also wrote the lives of Longfellow and Whittier, in the American and English *Men of Letters* Series, respectively.

Hill, Ambrose Powell, a Confederate general, was born in Culpeper County, Virginia, on November 9, 1825. He was graduated from West Point in 1847. He served in the Mexican and Seminole Wars. In 1861 he joined the Confederate army, becoming successively colonel, brigadier-general and major-general. He was in the battles of Bull Run, Cedar Mountain, Antietam, Chancellorsville and Petersburg. He received the surrender of Harper's Ferry, and at Chancellorsville succeeded to the command after the death of Jackson. He was in command of a corps in the army of northern Virginia, when killed in the battle of Petersburg on April 2, 1865.

Hill, James Jerome, an American railway promotor, was born at Guelph, Ontario, on September 16, 1838, a son of Scottish parents. He was educated at Rockwood Academy, a Quaker institution. It was the intention to fit him for a medical career, but his talents lay elsewhere. He became interested in the transportation and fuel business, and became a station agent. He bought the defaulted bonds of the St. Paul and Pacific Railway Company, with three associates, and reorganized this company as the St. Paul, Minneapolis, and Manitoba Railway, of which he was president for twenty-five years. He took an active interest in the building of the Great Northern system, of which he was president from 1889 to 1907, and chairman of the Board of Directors from 1907 to 1912. This system is remarkable in being the first transcontinental undertaking of its kind to develop without the assistance of the government. The title "Colossus of Roads," bestowed upon him, indicates something of his power and importance in the railway world. He died on May 29, 1916.

He was a tireless reader, a generous giver for educational purposes and even when nominally withdrawn from active business life, his touch was felt by all his great enterprises. His *Highways of Progress* deals profoundly with national development.

Hillsboro, the seat of Hill County, Texas, is the center of a fine agricultural district, thirty-four miles north of Waco. There are in the city ten churches, admirable public schools and high schools, and a courthouse. Pure artesian water adds to the healthfulness of the location. Hillsboro is served by four railroads. Its chief industries include cotton-seed oil and cake, cotton duck, bottling, batteries, egg hatcheries, Osnaburg (seamless cotton sacking), and flour. Novelties for advertising and confections are also manufactured. The population in 1930 was 7,824.

Hillis, Newell Dwight, an American clergyman, author and lecturer, was born in Magnolia, Iowa, in 1858. He was educated at Lake Forest University and McCormick Theological Seminary. He was ordained in 1887, serving as Congregational pastor in Evanston, Peoria, and Chicago. In 1899 he was called to the Plymouth Congregational Church in Brooklyn, New York, to Henry Ward Beecher's pulpit. He died in 1929. Among his works are *The Investment of Influence; The Influence of Christ in Modern Life; Contagion of Character,* and *Prophets of a New Era.*

Himalaya (*hĭ-mä'lȧ-yȧ*), from two Sanskrit words, meaning snow-abode, are situated in the southern and central parts of Asia between India and Tibet. They are not a single range, but a system of parallel ranges some 1,500 miles long. The mountains of the southern range are among the loftiest in the world, many of them exceeding 20,000 feet in height. One, Mt. Everest (29,141), is the highest measured mountain in the world. Among the others are Mt. Godwin-Austen (28,191), Kunchinjinga (28,225), Dhwalagiri (26,795) and Nanda-Devi (25,645). They form the southern slope. There are other peaks, whose height has not been ascertained, that are believed to be higher than Mt. Everest. The great rivers of India flow from these mountains through wild, narrow gorges often thousands of feet deep. There are many passes among the ranges from 16,000 to 19,000 feet high. Glaciers are found in every part of the range. The largest is the Biafo, ninety miles long. The mountains are considered sacred among the Hindus, and thousands of pilgrims ascend them yearly, travelling to the holy sources of the Ganges. They divide the central Asian tableland of Tibet from the plain of the Ganges in northern India.

Hincks, Sir Francis, a Canadian statesman, was born at Cork, Ireland, on December 14, 1807. He came to Canada in 1832 and lived in Toronto, where he became interested in politics and was editor of the *Examiner.* In 1841 he was elected to the Dominion parliament, and in 1842 was appointed inspector-general. From 1851 to 1854 he was joint premier of Canada. After serving from 1855 to 1862 as governor of the Windward Islands and, from 1862 to 1869, of British Guiana, he returned to Canada and assisted in the measures that united the British provinces in the Dominion. Knighted in 1869, he served as minister of finance four years. He was editor of the *Journal of Com-*

merce in Montreal for some years previous to his death, which occurred on August 18, 1885. His chief works include: *Religious Endowments in Canada* (1869); *The Boundaries formerly in Dispute between Great Britain and the United States* (1885), and *Reminiscences of my Public Life* (1885).

Hindenburg, von (*fōn hĭn′dĕn-bo͝ork*), **Paul von Beneckendorff,** a distinguished German soldier, patriot and statesman, was born at Posen, Prussia (now Poznan, Poland), on October 4, 1847. He was the son of a Prussian officer and Louisa Schwickhardt, the daughter of a staff physician. For more than 300 years the von Hindenburg sons had followed a military career. It was only natural then that young Paul should enter the army. In 1858 he entered the cadet school at Wahlstatt in Silesia. In 1866, upon finishing his cadet years at Wahlstatt, young von Hindenburg joined the 3rd foot guards at Danzig and soon was engaged in his first battle. The young subaltern was decorated for bravery at the Battle of Sadowa in the Austro-Prussian War. In 1870 he was awarded the Iron Cross for heroism at Sedan in the Franco-Prussian War. Seven years later he was promoted to the general staff of the German army.

In 1879 he married a young girl of eighteen, Gertrude Wilhelmine von Sperling, the daughter of a military officer. Three children were born of this union, a son Oscar (Col. Oscar von Hindenburg), and two daughters, Irmengarde (Frau Irmengarde von Brockhusen), and Anna Marie (Frau Anna Marie von Bentz).

The military genius of Captain von Hindenburg was clearly recognized by his superior officers, and he was steadily advanced in rank. In 1900 he was promoted to the rank of a major-general and in 1903 to that of lieutenant-general. He became a general of infantry in 1904. Seven years later, at the age of sixty-four, he retired to a life of ease at Hanover. He was not permitted, however, to enjoy this rest for long, for with 1914 came the opening of the World War. To Kaiser Wilhelm, who summoned the brilliant general on August 23, of that year, General Hindenburg replied, "I am ready." Four days later, together with General von Ludendorff, he succeeded in driving back the Russians from Germany's eastern border, practically annihilating the Russian forces at the memorable battle of Tannenburg.

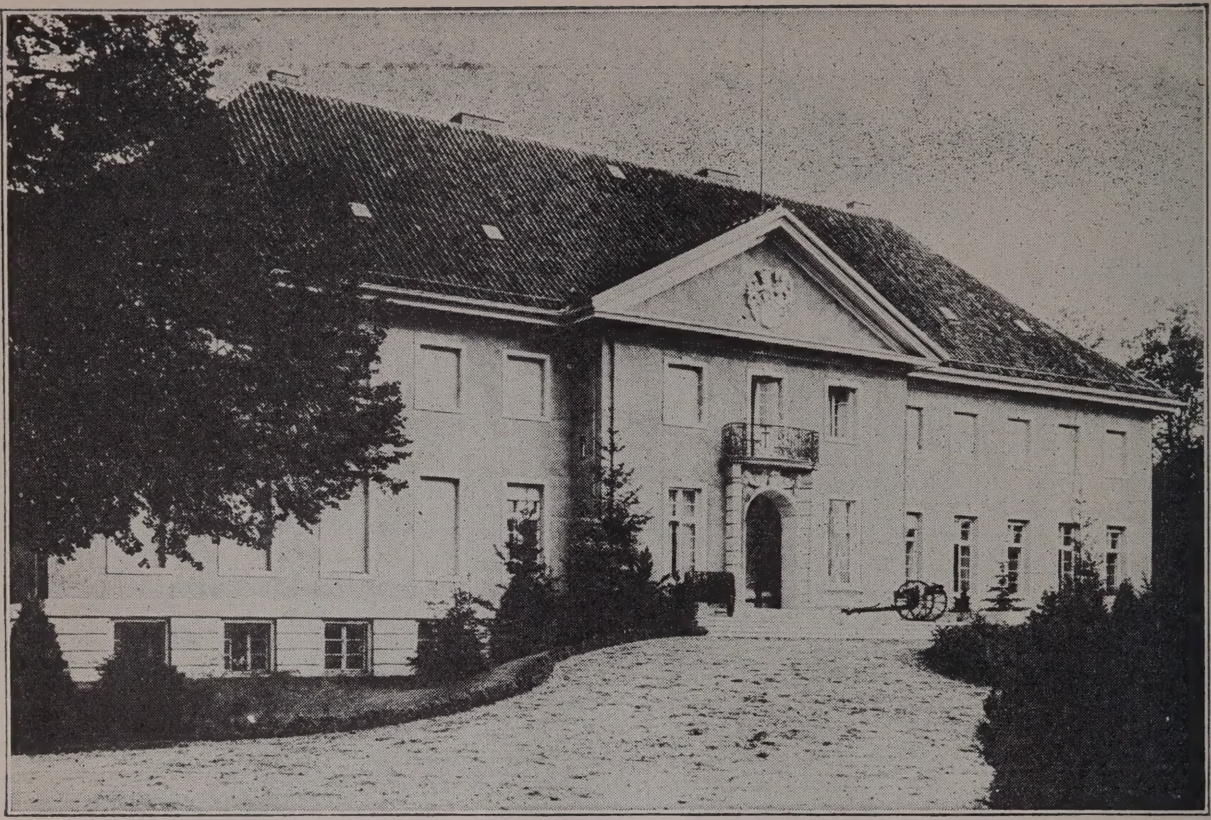
On August 28, 1916, von Hindenburg became Field Marshal and Commander-in-chief of the German forces. By the close of 1917 the Quadruple Alliance was well nigh nearing its objective under the capable leadership of Field Marshal von Hindenburg. The Italians had been defeated, and peace had been negotiated with Russia and Rumania at Brest-Litovsk (1918). It but remained for Germany's warrior and strategist to plan and effect the defeat of England and France. Despite the brilliant drives launched by the military leader, Germany gradually became exhausted. Von Hindenburg was cognizant of this growing weakness in 1918, just prior to his last drive. The famous "Hindenburg line" was finally smashed in the days following August 8, 1918. There followed defeat for Germany and then came the armistice. With the realization that he had met defeat, the aging field marshal tendered his resignation to the Kaiser and advised that negotiations for peace be put under way on the basis of the fourteen points presented by Woodrow Wilson. His resignation was rejected. Even after the Kaiser had fled, the old warrior, ever faithful to his monarchy, marched his defeated soldiers back to their homes. He went into retirement upon his estate at Neudeck, East Prussia.

In 1921 Frau von Hindenburg died, and the seventy-four year old marshal was left alone to find joy in his grandchildren and memories, believing his life work in the service of Germany was ended. Germany, now a republic, had not, however, forgotten its *"der alte"* or "grand old man." Von Hindenburg was ever loyal to his government and when the republic was ushered in he supported it, even as he had supported the monarchy. In 1925 he became candidate for the presidency of the government against former Chancellor Marx. He won the support of both Nationalists and Conservatives and upon taking the oath of fealty to the German Constitution he became President of the Republic of Germany. During his first term of office, seven years, he accomplished much for his country. He rebuilt its broken industries and reconstructed a disordered Germany. In 1932 he was re-elected, defeating Adolf Hitler for the presidency, winning the election by nearly six million votes. Nazi principles were even then being spread throughout the republic. On January 30, 1933, President Hindenburg found it necessary to appoint Adolf Hitler Chancellor of Germany if, as he believed, Germany was to be saved. The republic was immediately hurled into a reign of Nazism. Hitler won absolute power in the Reichstag elections and as Nazi control was extended, von Hindenburg's power waned, in spite of the fact that he thought by insisting upon the presence of Franz von Papen and other Junkers and Nationalists in Hitler's Cabinet that he had safely checked and balanced Nazism. Since the day of the Iron Chancellor, Bismarck, Germany has never had so revered and forceful a leader.

President Hindenburg had long been suffering from a physical disorder which was greatly aggravated by the infirmities of old age. In the latter days of July, 1934, the "grand old man" lapsed into a coma. He died at nine a.m. on August 2, in his large yellow mansion on his estate at Neudeck near Freystadt. With his death Germany indeed lost a friend. The whole country was cast into mourning. His death occurred just twenty years to the day after Germany began to arm for the World War. Flags flew at half staff throughout the republic. Mourning ceremonies were held at

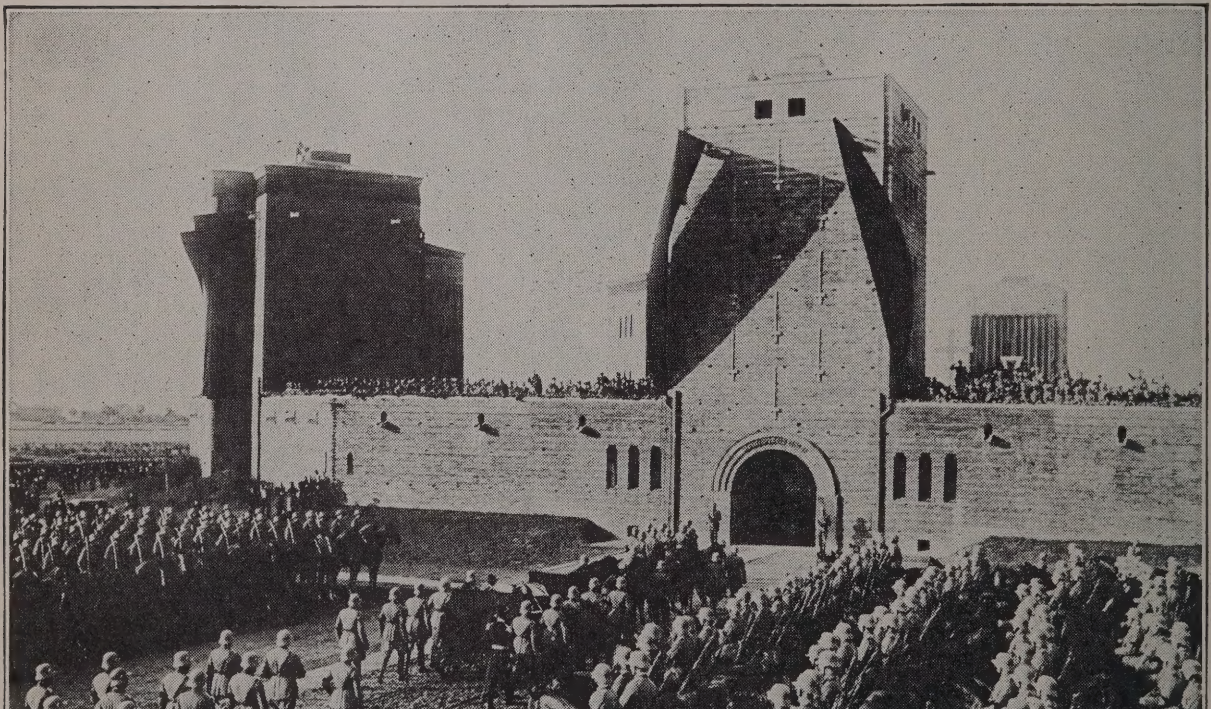
© *Acme*

Paul von Hindenburg



THE HOME OF PAUL VON HINDENBURG AT NEUDECK © *Acme*

It was at the large yellow mansion upon the von Hindenburg estate at Neudeck, near Freystadt, East Prussia, that Adolf Hitler visited the aged President shortly before his death on August 2, 1934.



FUNERAL CORTÈGE OF VON HINDENBURG © *Acme*

Martian pomp attended the funeral of President von Hindenburg of Germany as the cortège moved slowly towards the Tannenberg Memorial in East Prussia, the scene of his great triumph over the Russians during the World War. The tower of the Memorial, his resting place, has become a national shrine in Germany.

the Kroll Opera House in Berlin on August 6, and at Neudeck on the evening of the same day. Chancellor Hitler, who assumed the presidency immediately upon the warrior's death, spoke at both services.

Von Hindenburg's remains were conveyed to Tannenburg, the scene of his great victory in 1914. A solemn cortège followed his body, the youth of the nation strewing roses along the roadway. The body of the Field Marshal rested in the tower of Tannenburg Memorial guarded by soldiers. Sacrificial fires flamed to the sky throughout the day from the tower. Amid the throng in the arena of generals, veterans of the World War, the black coated *Schutzstaffel* (Hitler's hand picked guard), blue coated airmen, and Hitler youth in brown together with a host of others, stood von Hindenburg's son and daughters and grandchildren. The family was seated near a giant cross in front of which a catafalque had been erected. Adolph Hitler delivered the funeral oration and Germany's "*der alte*" was interred in the tower of the memorial. His resting place has become a national shrine in Germany.

See GERMANY; HITLER, ADOLF; WORLD WAR.

Hindu-Kush (*hĭn'dōō kōōsh*), the Indian Caucasus, is a range of mountains forming the westward continuation of the Himalayas, to which they are sometimes considered as belonging. They are separated from them by the Indus River. They separate Afghanistan from Turkestan, stretching westward for 365 miles with an average width of 200 miles. The highest measured peak is Tiratch-Mir, which rises to a height of 25,400 feet.

Hindustan. See INDIA.

Hippias, an Athenian tyrant, the date of whose birth is unknown, was the son of Pisistratus. At the death of his father in 527 B. C., he and his brother Hipparchus became joint rulers, and conducted the affairs of the government in accordance with the principles laid down by their father. Hipparchus was assassinated in 514 B. C., however, and then Hippias seized the power of government himself, put to death all whose fidelity to himself he had any reason to suspect, imposed heavy taxes and became generally tyrannical. After two unsuccessful attempts, his despotism was overthrown by the Alcmæonidæ, ancient enemies of his family, aided by a Spartan force led by Cleomenes. Hippias was compelled to leave Attica in 510 B. C., and afterwards condemned to perpetual banishment. He went to the court of King Darius of Persia, and succeeding in stirring up that monarch to enter upon the first Persian War against Greece. It is not definitely known whether Hippias was killed at the battle of Marathon or whether he died somewhat later at Lemnos. His death is usually placed as about 490 B. C.

Hippocrates (*hĭ-pŏk'rȧ-tēz*), the most celebrated of Greek physicians, was born on the island of Cos about 460 B. C., the son of Heraclides. He was also a descendant of Æsculapius. He studied under his father, Herodicus, Gorgios and Democritus. He became highly esteemed as a physician, and by his teaching gave the medical school at Cos a high reputation. He was cautious in his practice, stressing diet and nursing to such an extent that he was charged with letting his patients die because he apparently did so little to keep them alive. His works were quoted by Plato and Aristotle. The latter calls him Hippocrates the Great. He died at Larissa, Thessaly, about 357 B. C. Among his works are *Prognostica; De Morbis Popularibus; De Ratione Victus in Morbis Acutis,* and *De Capitiis Vulneribus.* The formulating of the *Jusjurandum,* or "Hippocratic Oath," is usually accredited to him.

Hippodrome, from the Greek *hippos,* meaning horse, and *dromos,* or race-course, is a place set apart for chariot and horse races. It was almost the counterpart of the Roman Circus, and extended over an area about one-half mile long, and one-eighth of a mile wide.

See OLYMPIC GAMES.

Hippopotamus (*hĭp'pō-pŏt'ȧ-mŭs*), whose name means river-horse, is a massive, thick-skinned animal of Africa, with short legs and a ponderous body. An air-breathing mammal, it lives in the water as well as on land. The hide is two inches thick, and on leaving the water it is covered with drops of reddish fluid that give rise to the saying that the hippopotamus sweats blood. This exudation gives the skin its dark fleshy-red color. On the head are small pointed ears, small eyes and a very broad snout, the nostrils of which can be tightly closed. The canine teeth are very large and curved, weighing sometimes eight or ten pounds, and are sold for ivory. Hippopotami remain mostly in the water during the day, coming to the surface from time to time for air, and go to pasture at night. They often go eight or nine miles to feed. Their ordinary food is grass and water-plants, but they also make inroads on cultivated fields and have been driven from the cultivated regions. They are no longer found in lower Egypt.

Hirsch, Maurice Baron de, an Austrian financier and philanthropist, was born at Munich, Bavaria, on December 9, 1831. His parents were wealthy Jews. Early in life Baron Hirsch had acquired a princely fortune. In 1888 he lost a beloved son, twenty years of age, and this moved him to devote twenty million dollars to the purpose of charity. He consulted prominent Jews in all countries, and by their advice this sum was invested in behalf of destitute Jews in Hungary, Russia, Galicia and Rumania. When, later the Jews were expelled from the Russian empire, Baron Hirsch devised an emigration scheme, involving the expenditure of about $10,000,000, to aid exiled Jews to settle in other countries, as the Argentine Republic, where 500,000 acres of land were acquired. Here 1,222 families were settled. Baron Hirsch bestowed sums privately in other charities, his benefactions in a single year amounting to $15,000,000. He donated to schools in Galicia and Bukowina, and to London hospitals. In 1892 he offered $2,500,000 to be used for the improvement of Russian Jewish emigrants to the United States. This fund has become known as the Baron de Hirsch fund. Baron Hirsch died in Hungary on April 20, 1896.

History, Teaching of. History has long been considered one of the most instructive subjects of human study. The important achievements of men in the great nations of the past are chiefly presented to us in history. The historians who have described the leading events of the chief nations have been among the great scholars and thinkers, as Herodotus, Thucydides, Tacitus, Grote, Von Ranke, Hume, Macaulay, Bancroft. History is valuable in many ways. We cannot understand the present without studying the past. Our important political and social institutions, our customs, our religious ideas, our inventions, our banking system, our schools, our architecture, our shipbuilding, our language and literature have all descended to us out of the past. It is by studying the origin and growth of these things in the past that we can appreciate their place and importance in the present.

History is also very instructive by furnishing examples of human life and character. The leading persons in history stand exposed to our judgment, in their actions and motives and in the results of their work. The statesman must study history in order to learn how to make laws and to govern. The theologian bases all his ideas on a historic past. The problems of political and social progress in the history of leading nations are much like the problems of to-day.

The history of one's own country naturally holds the first place of importance, but we also owe a large debt to all the great peoples of the past. The history in which we are most interested is generally classified as follows: The ancient nations, as Egypt, Judea, Babylon; the Greek and Roman civilizations; the history of medieval Europe; the development of the leading nations of modern Europe, as France, Germany, Spain and England; and finally, American history.

In our school programmes history holds an important place even in the elementary school. The common-school course of study has been much enriched lately with historical materials. Formerly a year's study was given to history at the end of the grammar-school. Now children are introduced to good history stories from the third and fourth grades on, and keep up the history studies into the eighth grade. American history from the time of the first exploration and settlements to the present time is remarkably well-adapted for use in elementary schools. All the early period of exploration and pioneer settlement is full of adventure and very simple in its setting. It is easy to trace the development of institutions from the rude early settlements on the Atlantic coast down to the present. There has been a gradual development from simple to more complex conditions of government, of industries and of social life. Our course of study is designed to bring to light the leading ideas, the important characters and the chief institutions of our country.

There are four principal periods in our own history: The period of exploration on sea and land; the era of settlement and colonial development till 1760; the struggle with England, the war for independence and the adoption of the constitution; and the growth of the country under the constitution.

In order to make such a course of study more effective with children, the more interesting and striking phases need to be selected. Teachers and textbook writers have of late treated the subjects biographically, so as to lend to history the interest of great personalities, as Columbus, William Penn, Washington, Robert Fulton, Eli Whitney, Andrew Jackson and Lincoln.

Fuller descriptions of the customs and modes of life among the people have added much to the instructiveness of the narrative. Source-materials, as documents, letters and descriptions of eye-witnesses of important events, have been introduced. A large number of excellent reference-books are now found in our libraries. The old habit of giving long chronological tables both of important and unimportant events has given way to a more intelligent and interesting study, based on a few leading topics. There also is a strong disposition to pay less attention to wars and battles and more to the achievements of peace. A more recent tendency is to select only a few of the more striking, pivotal and valuable topics in history and gather about them fuller, richer descriptions. This plan will avoid lumbering the child's mind with a great mass of mere historical data, and will produce a much clearer understanding of the essential facts and ideas developed in history.

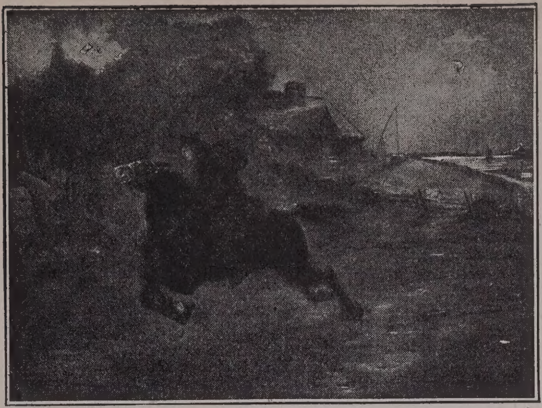
The methods of teaching history in the schools have become more vital and efficient. In the earlier grades history-stories are told orally by a skillful teacher, maps are outlined on the blackboard, historical charts showing changes in territory and populations are used, and the discussion of important topics by the children is encouraged. Source-materials and references to the larger histories are used to stimulate independent study and use of books.

C. A. McMurry.

Hit is the head of navigation of the Euphrates. uated on the right bank of the Euphrates in the Vilayet of Bagdad. The town lies among deserts and salt marshes about eighty miles northwest of Bagdad. The principal products of Hit are asphalt, naphtha, salt, lime, and gypsum. A large shipyard is situated here. Hit is the head of navigation of the Euphrates.

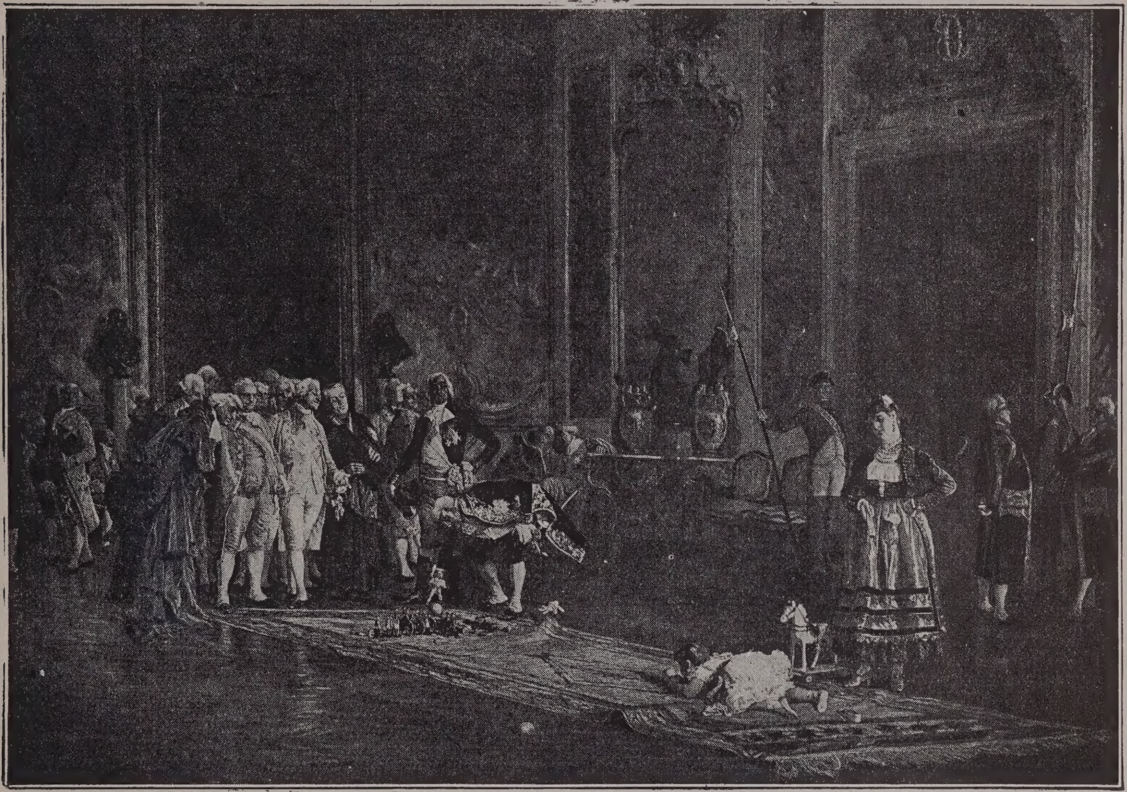
During the World War, the commander-in-chief of the British forces in Mesopotamia,

The Artist as Historian



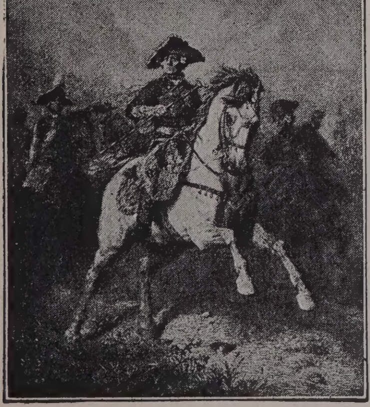
© *Horace K. Turner Co., Boston*
The Midnight Ride of Paul Revere, by Walter G. Page (American b. 1862)

Additional Examples of His Work

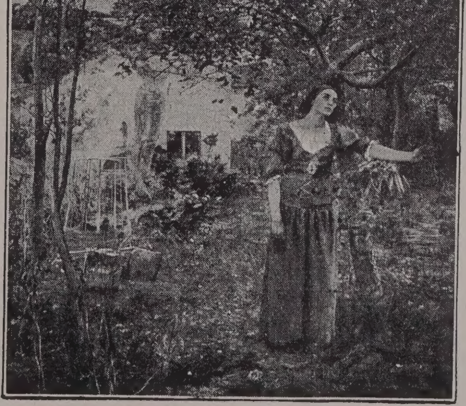


The Education of a Prince, by Edouard Zamacois (Spanish b. 1840)

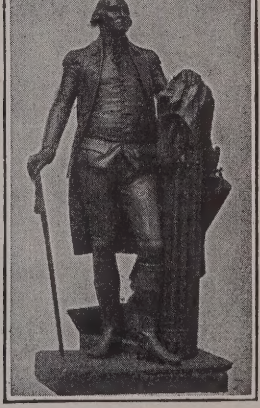
ZAMACOIS made his fame at a single stroke with this "Education of a Prince," when first exhibited in the Paris Salon of 1870. One element of interest is that it was suspected of being a sly satire on the education of the Prince Imperial, son of the shallow but ambitious Napoleon III., whose dreams were so rudely shattered by the Franco-German War (q. v.).



Frederick the Great
By Camphausen (German b. 1810)



Joan of Arc
By Bastien-LePage (French b. 1848)

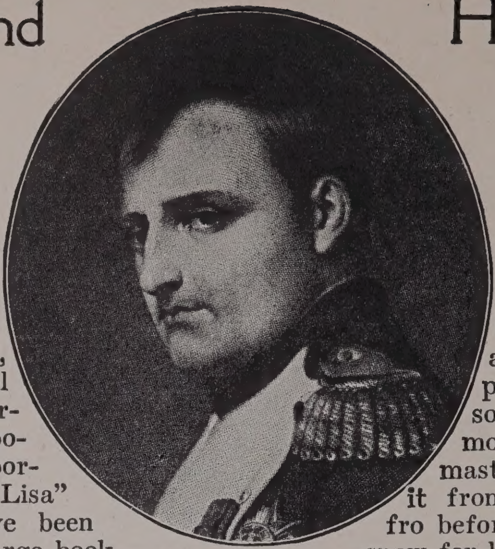


Washington
By Houdon (French b. 1741)

Biography and History in Art

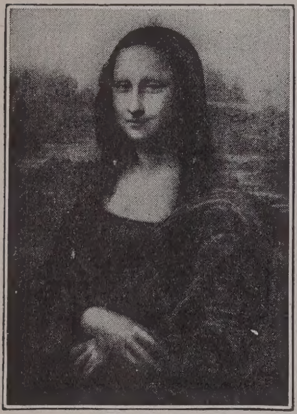
Some Famous Portraits

And Historic Paintings

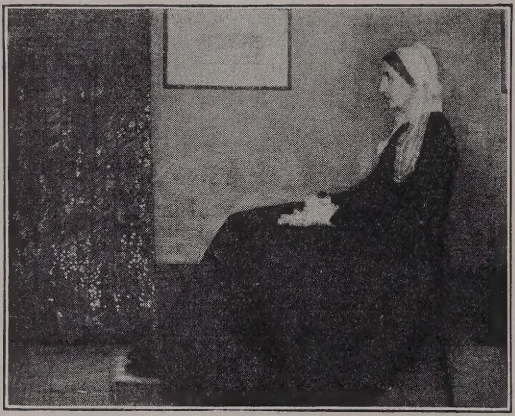


HOW much more quickly and forcibly than words could do does the French artist, Delaroche (b. 1797), tell us of the imperious character of the great Napoleon. On the wonderful portrait known as "Mona Lisa" the comments that have been written would make a large book.

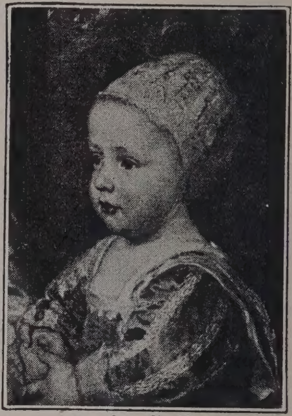
Whistler's Portrait of His Mother and Van Dyck's Baby Stuart are among the classics of portraiture, while Meissonier's "1814" is one of the most famous by this modern master. He made studies for it from horses ridden to and fro before him through mud and snow for hours.



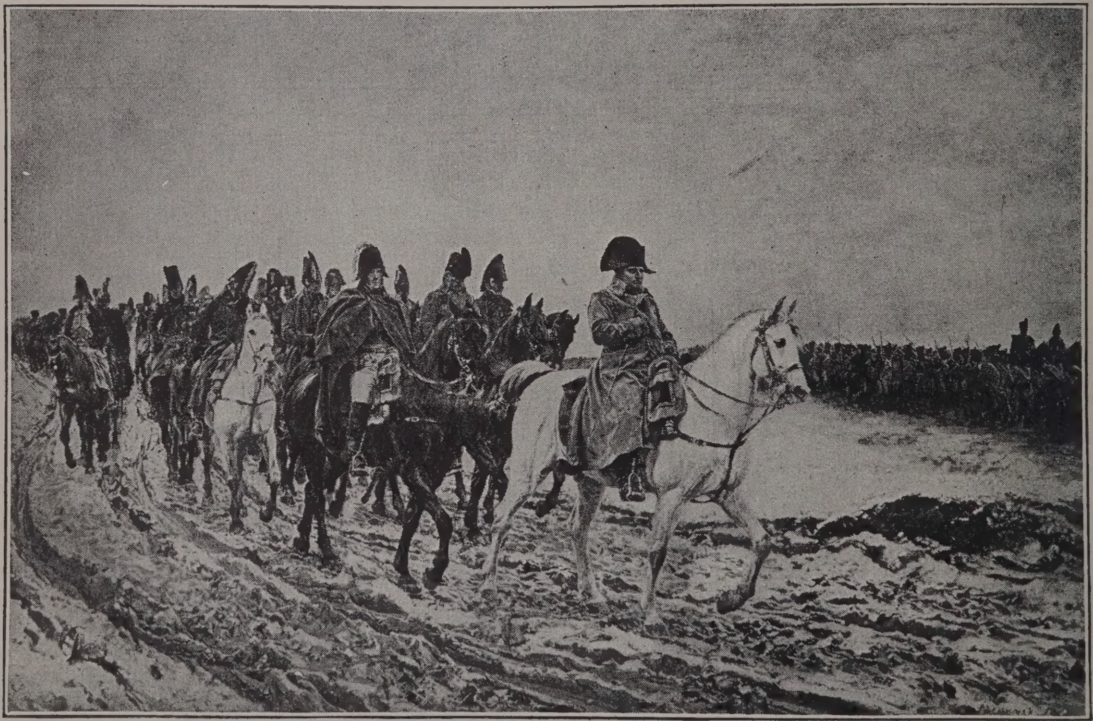
Louvre
Mona Lisa, by Da Vinci
(Italian b. 1452)



Louvre
Portrait of His Mother, by Whistler
(American b. 1834)



Turin Gallery
Baby Stuart, by Van Dyck
(Flemish b. 1599)



"1814" Retreat From Moscow, by Meissonier (French b. 1815)

THE CHARTS OF HISTORY.

In these charts the landmarks of the world's history are presented by centuries. Contemporary nations are ranged side by side, each designated by a separate color, and the chief events in the history of each nation are recorded with the proper date. The contemporary events of a century are taken in at a glance, and thus the eye is brought to the aid of the mind in grasping the whole current of history. The wonderful efficiency of this method, a brief study will demonstrate. It is to history what maps are to geography.

EXPLANATION.

The date of each century is given in heavy figures in the left margin. In Chart I note that the blue on the left represents the Hebrew nation. Going down these columns, we get the progressive history of each nation. For instance, we trace the history of the Hebrew nation from the time of Noah down to the period when, in 975 B.C., the one nation became two through the revolt of the Ten Tribes. This change is marked by a change of color under the headings Judah and Israel, and then we have the two nations instead of one. In like manner we have the history of Egypt and Greece. On the other hand, looking across the page we get the contemporary history of each century. We find that Joash in Judah, Elijah and Elisha in Israel, lived in the same century with Homer the Greek poet. In the next chart we see that in 721 B.C. the Assyrian empire, which had come into power, carried the Ten Tribes captive. So the color disappears, and its place is occupied by the color representing Assyria. We see that about 700 B.C. the Assyrian empire was over thrown and succeeded by the Babylonian empire; and later the Jews were wiped out, being carried captive to Babylon. So, by looking down this column, we get the complete history of these nations. In the same way we get the continuous history of Greece, and, in the last column, Rome. Looking across the page, we see that Hezekiah and Isaiah in Judah, the captivity of the Ten Tribes and the Epoch of the Olympiads, from which the Greeks reckoned time as we do from the time of Christ, and the founding of Rome were contemporary in the eighth century B.C. In like manner we see that the captivity of the Jews, the period of the seven wise men of Greece etc. occurred in the same century. In the next century we see that Xerxes, the mighty ruler, Ezra, Nehemiah and Malachi, the last of the Old Testament writers, were contemporary with Socrates and the Laws of the Twelve Tables, being the first time that the celebrated Roman laws were reduced to writing. Passing to later history, the next page shows the history of England, France, Germany and other nations of the world down to the sixteenth century. Looking from the top to the bottom of the first column, we can trace the history of England through these centuries. We see that the Danish kings were succeeded by the Norman kings; that the House of Plantagenet ran until 1399, when the House of Lancaster came into power, and was succeeded by the House of York and then by the House of Tudor. And so of each of the other nations. Looking across, as before, we get the contemporary history of each century.

The first six charts cover general history. We have five more which are given especially to the history of the United States and one on Canadian history. Chart VII is the colonial chart. The first thing that will attract your attention is the fact that Virginia was the oldest colony, as shown by the position of the color representing Virginia on the page. The next was New York, and the third was Massachusetts. These were the great mother colonies. We also notice that Maryland and North Carolina were originally a part of Virginia and were separated from it. So New Jersey and Delaware were part of New York; Connecticut, Rhode Island and New Hampshire were originally part of Massachusetts; South Carolina, Pennsylvania and Georgia were orignally settled on the dates given. Looking across, at the top, we see that the first settlement was at Jamestown in 1607; the next on Manhattan Island by the Dutch, in 1614; and the third by the Puritans, in 1620. Looking down the column, we see that tobacco was first introduced in 1615; slavery, 1619; cotton, 1621, etc. Passing down into the next century, we have the chief events of the Revolutionary War. Then follows a chart on the history of the United States after the adoption of the Constitution. Few persons can give, in their proper order, the names of the Presidents of the United States, and tell which had one term and which two. Here they are given in a very striking way: Washington, two; Jefferson, two; Madison, two, and so on. Wherever there are two terms, the different administrations are separated by a line and the chief events of each administration are recorded. On the right we have the events which occurred in the Old World. In like manner Chart XII gives us a complete, progressive history of Canada. We thus show how simple and effective these charts are. If we think of New York, involuntarily the map is before our eye and we see just where New York stands on the coast. Now, these charts in like manner locate events. They are made very simple by including only the landmarks of history.

CHART I.

B. C.	Hebrew Nation		Egypt	Greece
	2350. The Flood. 1921. Call of Abraham. 1728. Joseph sold into Egypt. 1706. Jacob removes into Egypt. 1574. Aaron born. 1571. Moses born. 1491. Exodus from Egypt. 1491. The Law given on Sinai. 1451. Moses died. 1451. Joshua leads Israel into Canaan. 1300. Judges rule Israel for 450 years.		**Cheops,** who built the great pyramid. 1350. Sesostus conquers Asia.	
	85. Deborah judges Israel. 45. **Gideon** slaughters Midianites.			Fabulous. 63. Jason and the Argonauts. Birth of Hercules.
1200	88 Jephthah. 56 Eli judges Israel. 37. **Samson** 20. **Samuel.**			94. Trojan War begins. 84. Troy taken.
1100	95. **Saul** anointed King 55. Slain by the Philistines. 55. **David** reigns. 43. He subdues the Philistines, Ammonites and Syrians. 23. Absalom revolts and is slain. 15. **Solomon** King. 4. Temple dedicated.			69 Codrus, last king of Athens, died. 68. Archons chosen instead of kings. 43. Ionians settle in Asia.
1000	75. Solomon died 75. Rehoboam reigns. 75. Ten Tribes revolt under Jeroboam.		78. **Shishak,** builder of second pyramid. 71. He conquers Judea, takes Jerusalem and plunders the temple.	**Amphyctionic Council,** composed of representatives of principal Greek States, is made the court for settling interstate disputes. Hesiod, poet.
	Judah	**Israel**		
	58. Abijah defeats Jeroboam. 55. Asa, a pious king. 4. Jehoshaphat.	75. Jeroboam I. 54. Nadab. 26. Samaria built. 18. Ahab and Jezebel.		
900	89. Jehoram. 88. Jerusalem plundered by Philistines. 78. Joash. 40. Slays Zachariah, priest. 26. Jerusalem taken by Jehoash.	Elijah the prophet. 88. Elisha the prophet. 84. Jehu. 40. Jehoash; he defeats Ben-hadad, king of Syria.		**Homer,** the greatest of Greek poets. 80. Lycurgus, "The Spartan Lawgiver."
800				

CHART II.

B.C.	Judah	Israel	Assyrian Empire	Greece	Rome
	Uzziah. Joel the prophet. Amos the prophet. 59. Jotham. 42. Ahaz; made tribute to Tiglath-Pileser.	Jonah the prophet. 84. Anarchy. 47. Invasion of Tiglath-Pileser. 30. Hosea; pays tribute to Shalmanezar.	47. Tiglath-Pileser. 28. Shalmanezar.	76. **Epoch of the Olympiads** from which the Greeks reckoned time. 46. Austomenes, last king of Corinth.	53. **Rome founded by Romulus.** 15. Numa Pompilius. 8. Tarentum founded.
	26. **Hezekiah.** **Isaiah** the prophet. Nahum the prophet 10. Sennacherib destroyed.	21. The Ten Tribes carried captive to Assyria. 9. Esarhaddon.			
700	97. Manasseh. 42. Amon. 41. Josiah. **Jeremiah** the prophet. Zephaniah the prophet. Habakkuk the prophet. 6. Jerusalem taken by Nebuchadnezzar.	**Babylonian Empire** Esarhaddon reigns at Babylon. He plants colonies in Samaria whose descendants are called Samaritans. 6. **Nebuchadnezzar**; he defeats Necho of Egypt, and takes Jerusalem.		85. Second Messenian War. 24. Bloody code of Draco. Sappho, poetess. Ascendency of Sparta.	72. Tullus Hostilius. 40. Ancus Martius; he subdues the Latins. 16. Tarquin the Elder.
600	98. Jehoiachin. 96. Zedekiah. 88. Jerusalem destroyed. **Ezekiel** the prophet	Nineveh destroyed by Nebuchadnezzar.		94. **Solon,** the Athenian Lawgiver. 62. Comedies first exhibited at Athens. 60. **Pisistratus.** **Thales,** founder of Ionic philosophy. 60. Temples built. 34. Thespis exhibits tragedies first at Athens. **Pythagoras,** philosopher. 10. Hippias expelled.	78. Servius Tullius. 34. Tarquin the Proud. 9. **The Republic.** Consuls chosen. 1. Dictatorship created.
	Jews carried captive to Babylon. 61. Evilmerodach. 60. Neriglissar. 55. Belshazzar. 38. Babylon taken by Cyrus the Mede, who establishes the **Medo-Persian Empire** 36. Cyrus' decree restoring the Jews. 21. Darius. Zechariah the prophet. Haggai the prophet. 15. Second temple dedicated.				
500	94. Darius invades Greece. 90. His army defeated at Marathon. 85. **Xerxes** the Great. 81. He invades Greece. 80. He returns defeated. 67. **Ezra** returns to Jerusalem. 64. Artaxerxes I. or Ahasuerus. 56. He makes Esther Queen. 55. **Nehemiah** rebuilds Jerusalem. **Malachi,** last of Old Testament writers.			Anacreon, poet. 91. Death of **Thucydides,** historian. 90. Miltiades defeats the Persians at Marathon. 80. Xerxes defeated at Thermopylæ. 79. Persians defeated at Platæa. **Æschylus,** poet. 64. Third Messenian War. 45. **Herodotus,** historian. 31. Peloponnesian War. 29. Death of Pericles. Euripides, poet. Sophocles, poet. **Socrates,** the great moralist.	93. Tribunes chosen. 82. Coriolanus. 56. **Cincinnatus,** dictator. 51. Laws of the Twelve Tables. Decemvirs appointed. 45. Military Tribunes created.
400					

CHART III.

B. C.

Medo-Persian Empire

Artaxerxes Mnemnon.

Cyrus revolts.

Is slain at the battle of Cunaxa.

36. Darius Codomanus.

Greece

95. Corinthian War begins.
80. Olynthian War.
78. Theban War.
71. Battle of Leuctra.
63. Battle of Matineia.
61. Death of Hippocrates.
51. Death of Xenophon, historian.
48. Death of Plato, philosopher.
38. War with Macedon.
38. Battle of Chæronea; Philip victorious.

Macedon

59. **Philip** the Great.

Rome

91. Gauls invaded Rom
90. Rome burned by Ga
69. Military Tribunes ab
ished.
43. Samnian War begin
lasts 71 years.
40. Latin cities surrend

Macedonian Empire

36. **Alexander** the Great.
34. Invades Persia. Battle of Granicus.
32. Conquers Egypt and Tyre.
30. Battle of Arbela. Persia subdued.
23. Alexander dies at Babylon.
35. Conquers Athens and Thebes.
33. Battle of Issus; Darius defeated.
32. Alexander in Jerusalem.
28. Defeats Pontus of India.

300

At the death of Alexander, the Macedonian Empire was divided into numerous States

Egypt

Ptolemy Lagus, founds Library of Alexander.
84. Ptolemy Philadelphus.
46. Ptolemy Evergetes.
21. Ptolemy Philopater.
4. Ptolemy Epiphanes.

Judea
Subject to Egypt

Syria

Seleucus.
83. Antiochus I.
46. Seleucus II.
26. Seleucus III.
23. Antiochus the Great.

Greece

97. Republic re-established.
81. Achæan League formed.
64. Death of Zeno, philosopher.
71. Death of Epicurus, philosopher.
51. Achæan League renewed.

Macedonia

98. Philip IV.
88. Macedonia subdued by Lysimachus King of Thrace.

80. Pyrrhus, king of Epi
defeats the Roman
74. He is driven from Ita
65. First Punic War.
55. Carthaginians defe
by Regulus.
18. Second Punic War.
18. **Hannibal** crosses
Alps; Romans def
ed at Ticinus
Trebia.
16. Battle of Cannæ.
14. First Macedonian W
8. **Scipio** sent to Afric
2. He defeats Hannibal.

200

80. Ptolemy Philometer.
45. Ptolemy Physcon.
17. Ptolemy Lathyrus.

Antiochus takes Judea and repels the Egyptians.
75. Antiochus IV.
65. Judas defeats Antiochus.
35. John Hyrcanus frees Judea from power of Syria.
6. Aristobulus.
5. Alexander Jannæus.

30. Antiochus VII.
23. Antiochus VIII.
12. Antiochus IX.

91. Sparta becomes a member of the league.
88. Laws of Lycurgus abolished.

78. Perseus.
68. Battle of Pydna.

Second Macedonian
72. Third Macedonian W
Perseus defeated.

Macedonia made a Roman province.

49. Third Punic War.
46. Corinth taken; Greece made a Roman province.
46. Carthage destroyed.
34. First Servile War.
2. Second Servile War.

33. Spain conquered.
The Gracchi.

100

Ptolemy Alexander.

70. Hyrcanus II.
67. Aristobulus II.

95. Antiochus X.
92. Antiochus XI.
87. Antiochus XII.
69. Antiochus XIII.

90. Social War.
88. First Pontian War.
86. Second Pontian War.
73. Third Servile War, under Spartacus.

54. Death of **Lucretius**, poe
35. Death of Sallust, historia
19. Death of **Virgil**, poet.
8. Death of **Horace**, poet.

65. Berenice, Queen.

45. Cleopatra.

66. Pompey subdues Syria and Judea.
60. First Triumvirate—Pompey, Crassus and Cæsar.
55. Cæsar invades Britain.
48. Civil War between Cæsar and Pompey.
47. Battle of Pharsalia; Pompey defeated.
45. Cæsar Dictator.
43. Second Triumvirate—Octavius, Antony and Lepidus.

63. **Cicero** crushes Cataline.
53. Crassus slain by Parthians.
44. Cæsar assassinated.
31. Antony overthrown.

30. Egypt subdued.

30. Octavius, surnamed Augustus, Emperor

A.D.

CHART IV.

A. D.	**THE ADVENT.**	
	14. Augustus died. Tiberius, Emperor. 36. Caligula. 41. Claudius. 54. **Nero.** 70. Vespasian. 70. Jerusalem destroyed. 79. Titus. 81. Domitian. 98. Trajan.	71. **Livy**, historian, died. 25. **Strabo**, historian, died. 65. **Seneca**, philosopher, put to death by Nero. 79. Pliny the Elder died. 79. Herculaneum and Pompeii destroyed by eruption of Vesuvius. 81. Agricola conquers Britain. 97. **Quintilian**, orator and writer, died. 97. **Josephus**, Jewish historian, died.
100	17. Hadrian, surnamed The Best. 37. He rebuilds Jerusalem. 38. **Antoninus Pius.** 61. **Marcus Aurelius.** 80. Commodus. 93. Septimius Severus.	15. Pliny the Younger died. 20. **Plutarch**, biographer, died. 28. Juvenal, poet, died. 35. **Tacitus**, historian, died.
200	11. Caracalla and Geta, sons of Severus. 18. Heliogabalus. 22. Alexander Severus. 68. Claudius II. 70. Aurelian; he defeats the Goths and Germans. 84. Diocletian.	**Tertullian**, an able defender of Christianity, originally a pagan. 54. **Origen** suffers martyrdom.
300	12. **Constantine** the Great. 30. Seat of Empire removed to Constantinople. 61. Julian the Apostate. 64. Empire divided. Valentinian Emperor of the West. Valens of the East. 79. Theodosius the Great, reunites the Empire. 95. Empire permanently divided. Arcadius Emperor of the West. Honorius of the East.	16. Arius. 25. Council of Nice. 35. Athanasius, bishop of Alexander, exiled.
400	Alaric the Goth invades Italy. 9. Invasion of Spain by the Vandals, Alians, and Suevi. 10. Alaric sacked Rome. 51. Attila the Hun defeated.	7. Chrysostom died. 30. St. Augustine died. 55. Vandals under Genseric pillage Rome. 75. Romulus Augustulus, last Roman emperor. 76. Roman Empire overthrown by Odoacer, King of Heruli.

DECLINE OF ROMAN EMPIRE

Britain and Ireland	Kingdom of the Franks:	East Goth Kingdom:	Eastern Empire:
	France, W. Germany, Belgium, Netherlands.	**Rome, Italy, Austria, Hungary, Slavs.**	**Constantinople, Turkey, Greece, Bulgaria.**
87. Prince Arthur defeats Saxons. 90. Sussex made kingdom.	81. Clovis, Belgium, founds monarchy. 86. Defeats Romans. Rise of feudal system. 91. Thuringia subdued. 96. Colvis converted to Christianity. Conquers Alemania.	90. Theodoric, the Ostrogoth, slays Odoacer. Rules Goths, subject to Constantinople.	80. Earthquake damages greater part of Constantinople.

CHART IV—Continued.

A. D.	Britain and Ireland	Kingdom of the Franks	East Goth Kingdom	Eastern Empire
	Picts and Scots. Heptarchy.	France, West Germany, Belgium, Netherlands.	Rome, Italy, Austria, Hungary, Slavs.	Constantinople, Turkey, Greece, Bulgaria.
500	19. Cedric defeats Arthur (King of the Round Table). Founds Wessex. 42. Arthur murdered. 59. Saxon Heptarchy established. 97. St. Augustine and monks arrive. 98. St. Augustine made first Archbishop of Canterbury.	07. Clovis adds Aquitania to Kingdom. 11. King Clovis died; four sons divide empire; they war on each other. 31. Thuringia annexed. 32. Burgundy conquered. 36. Provence annexed to kingdom. 55. Bavaria becomes tributary. 67. Gascony conquered.	28. Theodoric died. 29. Belisarius seizes Naples. Benedictine Monks established. 35. Belisarius (Justinian general) subdues Rome. 68. Lombards conquer Italy. Feudal system established. 90. Gregory the Great made Pope.	27. Justinian (Emperor) publishes code **(Digest)** during his reign. 29. He closes Athenian schools. Belisarius defeats Persia. 34. Belisarius defeats Vandals (Africa). 35-37. He defeats Italy; subdues Rome. 40. Corsica, Sardinia, North Africa annexed. 48. Turks found monarchy in Asia. 65. Justinian died. Justin II. succeeds him. 69. Alliance with Turkey. 70. Muhammad born in Mecca.
600	04. Ethelbert (Kent) founds Church of St. Paul. 17. Sabert (Kent) founds St. Peters (Westminster). 64. Northumbria adopts Roman Catholic form (Whitby). 73. Venerable Bede born. 98. Picts adopt Christianity.	38. Dagobert, who united kingdom, died. Clovis II. redivides empire; he rules Neustria, Sigebert Austrasia. 87. King Pepin d'Heristal reunites Neustria and Austrasia and later gets Burgundy under control, consolidating vast Frankish Empire.	04. Pope Gregory died. He may be said to have founded temporal power for all Popes. 25-40. Rise of Moslem power in Jerusalem, Alexandria, and Antioch. Churches in those countries lost to Christian World.	**Various Countries.** 00. Eastern empire declines, to 800. 22. The Hegira (flight of Muhammad from Mecca to Medina). 23. Herachlius defeats Persia. 32. Muhammad died. Koran compiled and published later. 34. Moslems seize Syria. 38. Saracens (Moslems or Mohammedans) take Jerusalem; hold it 463 years. 55. They defeat Eastern Empire fleet. 80. Bulgarian kingdom established. 98. Moslems conquer Carthage.
700	35. Venerable Bede died at Jarrow. 87. Danes invade Britain.	14. Pepin died. His son, Charles Martel ruled as Duke of Austrasia. 25. Bavaria subjugated. 32. Saracens defeated at Tours. Moslems invade Europe. 41. Charlemagne born. 51. Charles Martel died. Kingdom is divided between two sons. One resigns, leaving his brother, Pepin the Short, sole ruler. 71. Charlemagne ruler. 73. He overthrows Lombards and in 774 becomes King of all Franks (Neustria and Austrasia or France and Germany) 78. And also King of Lombards. 78. He invades Spain and attacks Moors. 88. Bavaria annexed.	51. Aistulf (Lombard) takes Ravenna and threatens Rome.	00. Saracens subdue Africa. 11. They invade Spain. 15. Moslem domain extends from the Pyrenees to China. Caliph Walid I. ruler. 42. Arabs (Moslems) begin decline. 62. Moslems establish Bagdad as Capital. 66. Turks plunder Asia Minor, Cordova. 80. Hungarian Kingdom established.
800	14. Egbert (Wessex) conquers Britons. 27. He unites Heptarchy and names it:—	00. Charlemagne crowned Emperor by Pope. 14. Charlemagne died. His son, Louis the Pious, rules. 40. Sons of Louis divide Frankish Kingdom.		22. Moslems attack Constantinople, but are defeated by Bulgaria.
		THE DISRUPTION OF THE CHARLEMAGNE EMPIRE.		
	England.	**France.**	**Germany.**	
	28. Egbert becomes England's first king. 38. Scots annex Picts. 49. Alfred the Great born. 67. Danes defeat Northumberland. 71. Alfred the Great conquers Danes. 90. He founds Oxford University.	**40. Charles the Bald.** 85. Normans invade Paris.	**40. Louis I.**	**40. Lothaire of Italy** (from Charlemagne Empire). 41. Treaty of Verdun. 42. Italy divided among Lothaire's sons. 62. Ruric (Norse) consolidates Slavic tribes about Novgorod and Kief. 75. Harold, first King of Norway. 89. Arpad founds Hungary; wars against Bulgarians, Wallachians, Italians.
900	01. Alfred the Great died. 15. Cambridge University founded. Continued warring with Danes during this century.	54. Aquitaine and Burgundy granted to Hugh. 60. Hugh Capet, Duke of France. 88. He founds Capetian line of Kings.	62. Otto II. crowned emperor.	04. Russian fleet at Constantinople. 40. King Leon of Spain defeats Moors. 73. St. Steven, Hungarian King, publishes laws. 81. Vladimer the Great, first Christian King of Russia.

CHART V.

A.D.	England	France	Germany	Various Countries
1000	2. Massacre of St. Brice. 13. **Danish Kings.** 17. Canute I., the Great. 39. Canute II. 41. **Saxons Restored.** Edward the Confessor. 44. Common Law Established. 66. **Norman Kings.** William the Conqueror.	Robert II. Son of Hugh Capet. 31. Henry I. 60. Philip I. Invasion of William the Conqueror. 96. First Crusade.	2. St. Henry. 24. Conrad II. 39. Henry III. 56. Henry IV. 73. War with Saracens begins.	35. Kingdom of Aragon. 54. Schism or separation of the Greek Church from Rome. 65. Turks take Jerasalem. 73. War of Investitures. 73. Hildebrand becomes Pope Gregory VII.
1100	Henry I. Usurper. 54. Henry II. **House of Plantagenet.** 71. Ireland subdued. 89. Richard I. Cœur de Leon. 99. John.	8. Louis VI. the Fat. 37. Louis VII. 46. Second Crusade. 80. Philip II. 87. Third Crusade. 94. Fourth Crusade. Abelard, Scholastic Philosopher.	6. Henry V. 38. Conrad III. 52. Frederic I. (Barbarossa) invades Italy. 63. Berlin founded. 95. Two Sicilies acquired.	Crusaders take Jerusalem. 25. Venetian Wars. 59. Alexander III. Italy. 71. Saladin, Sultan of Egypt. 94. Innocent III., Pope.
1200	15. The Magna Charta Signed. 16. Henry III. 62. The Barons' War. 65. Barons defeated by Edward at Eversham. 72. Edward I. 82. Wales conquered. 84. Title Prince of Wales created.	8. Albigensian Crusade. 23. Louis VIII. 26. Louis IX. 28. Sixth Crusade. 45. Seventh Crusade. 70. Eighth Crusade. 85. Philip IV.	8. Otto IV. 12. Frederic II. 41. League of Hansetowns. 73. **House of Hapsburg.** Rodolph I.	4. The Inquisition instituted. 15. Doctrine of Transubstantiation and Auricular Confession established. 18. Genghis Khan, Mogul, subdues Persia. 29. Laity prohibited from reading the Scriptures. 38. Kingdom of Granada. 65. Dante born. 82. Sicilian Vespers.
1300	7. Edward II. 14. Battle of Bannockburn. 27. Edward III. 28. Chaucer born. 46. Battle of Crecy. 56. Battle of Poictiers. 77. Richard II. 84. John Wickliffe died. 99. Henry IV. **House of Lancaster.**	16. Philip V. 28. Philip VI. **House of Valois.** 45. Dauphiny annexed. 64. Charles V. 80. Charles VI. Froissart, historian.	7. William Tell. Switzerland revolts. 9. Henry VII. 30. *Gunpowder invented.* 38. German Princes deny the temporal power of Pope. 49. Charles IV. 56. He issues the "Golden Bull."	8. Popes removed to Avignon. 11. Knights Templars abolished. 21. Dante died. 74. Petrarch died. 87. Margaret, Queen of Denmark and Norway. 95. Tamerlane in Russia.
1400	13. Henry V. Wars with France. 15. Battle of Agincourt. 22. Henry VI. 53. War of Roses. 61. Edward IV. **House of York.** 83. Richard III. **House of Tudor.** 85. Henry VII.	22. Charles VII. 29. Joan of Arc at Orleans. 30. She is burned by the English. 51. The English driven from France. 61. Louis XI. 85. Charles VIII.	15. Council of Constance. John Huss burned. 31. **House of Austria.** 35-58. *Printing invented.* 83. Martin Luther born.	Tamerlane overran Syria. House of Medici in Florence. 53. Constantinople taken by Turks. Isabella and Ferdinand unite Castile and Arragon. 92. Columbus discovers America.
1500	9. Henry VIII. 13. Battle of Flodden. 33. Henry divorces Catherine and marries Anne Boleyn. 36. Beheads Anne and marries Jane Seymour. 47. Edward VI. Cranmer. 53. Bloody Mary. 58. Elizabeth reigns. 64. Church of England Established. Puritan party formed. 87. Mary Queen of Scots beheaded.	Louis XII. 15. Francis I. 47. Henry II. 59. Francis II. 62. Huguenots' War. 64. John Calvin died. 72. Massacre of St. Bartholomew. 74. Henry III. 89. Henry IV. **House of Bourbon.**	16. Luther begins the Reformation. 19. Charles V. 21. Diet of Worms. 30. Augsburg Confession. 56. Charles abdicates. Ferdinand I. chosen Emperor.	4. French in America. 13. Leo X., Pope. 13. Ponce de Leon in Florida. 21. Wars of Charles V. in Italy. 32. Pizzarro conquers Peru. 33. Ivan IV. of Russia. 35. Order of Jesuits founded. 36. Cortez conquers Mexico. 56. Philip II. of Spain. 59. Frederick II. of Denmark.

CHART VI.

A. D.	England	France	Prussia and Germany	Various Countries
1600	3. James I. **House of Stuart** 11. Translation of Bible. 16 **Shakespeare** died. 25. Charles I. 26. Sir Francis Bacon died. 49. Oliver Cromwell. **The Commonwealth** 60. Stuarts restored. Charles II. 79. Habeas Corpus Act. 85. James II. 88. William Prince of Orange.	10. Henry IV. murdered. 10. Louis XIII. 20. Navarre annexed. 29. Cardinal Richelieu. 43. Louis XIV. 48. Wars of the Fronde. 50. Des Cartes died. 85. Edict of Nantes revoked. 97. Peace of Ryswick.	18. Thirty Years' War begins. 20. Battle of Prague. 30. **Kepler** died. 32. Battle of Lutzen. 40. Frederick William the Great. 48. Peace of Westphalia. 78. Peace of Nimuegen.	9. Arminius, divine, died. 11. Gustavus Adolphus of Sweden. 42. **Galileo** died.—Italy. 44. Christina crowned. 62. Catherine I. of Russia. 89. **Peter the Great** of Russia. 97. Charles XII. of Sweden.
1700	2. War with France. 13. Peace of Utrecht. 14. George I. **House of Hanover** 27. George II. 27. Sir Isaac Newton died. 29. Rise of Methodists. Wesley and Whitfield. 39. War with Spain. 46. Charles, son of Pretender, defeated at Culloden. 56. War with France. 56. Chatham, Prime Minister. 60. George III. 75. War with United States. 93. War with France. 94. Gibbon, historian, died. 96. Robert Burns died. 97. Edmund Burke died.	15. Louis XV. 38. Peace of Vienna. 48. Peace of Aix-la-Chapelle. 56. War with England. 63. Peace of Paris. 74. Louis XVI. 78. Voltaire died. 83. Peace of Versailles. 89. States General. **The Revolution** 93. Republic declared. **Reign of Terror** 95. The Directory. 97. The Consulate.	4. Battle of Blenheim. 13. Peace of Utrecht. 14. Peace of Rastadt. 22. Pragmatic Sanction. 40-48. War of the Austrian Succession. 40. **Frederic II.**, the Great. 41. Charles VII. 45. Francis I. 56. Seven Years' War begins. 65. Joseph II. 92. Francis II. 97. Frederic William III.	12. St. Petersburg founded. 25. Catherine II.—Russia. 27. Elizabeth.—Russia. 33. Franco-Polish war. 69. Clement XIV. 96. Napoleon invaded Italy. 97. Peace of Campo Formio. 98. Pius IV. deposed by Napoleon.
1800	Ireland - Great Britain united. 5. Battle of Trafalgar. 7. Slave Trade abolished. 8. Peninsular War. 12. **War with U. S.** 14. Peace with France. 15. War with Napoleon. 20. George IV. 29. William IV. 32. Sir Walter Scott died. 37. **Victoria crowned.** 54. Crimean War. 56. War with Persia, China. 57. Mutiny in India. 66. Atlantic Cable laid. 67. Fenian troubles. 67. War with Abyssinia. 72. Conference of Geneva. 78. Afghanistan War. 82. War in Egypt. 97. Queen's Diamond Jubilee. 98. Gladstone died. 99. Boer War.	4. **Bonaparte** Emperor. 12. Invades Russia. 13. Battle of Leipsic. 14. Louis XVIII. 14. **Waterloo.** Napoleon overthrown. 30. Louis Philippe. 35. Death of Lafayette. 47. Revolution. Louis Philippe abdicates. 48. Republic. 52. **Napoleon III.**, Emperor. 70. War with Prussia. Napoleon surrendered at Sedan. 71. **The Republic.** Thiers, President. 73. Napoleon III. died. 94. President Carnot assassinated.	04. Francis II. of Austria assumed title of Emperor. 05. Battle of Austerlitz. 06. Battle of Jena. 12. War with Russia. 13. War with France. 16. Germanic Confederation. 40. Frederic William IV. coronated. 48. Hungarian War. **Francis Joseph** becomes emperor of Austria - Hungary (1848-1916). 59. War with Italy and France. 61. **William I.** becomes King. 66. No. German Confederation. 66. War with Prussia. 70. War with France. Gains Alsace-Lorraine. 71. King William I. made Emperor. 88. William I. died March 9. 88. Frederick III. died July 15. 88. William II. made Emperor. 98. Bismarck died.	1. Alexander.—Russia. 15. Netherlands united. 26. Nicholas.—Russia. 30. Belgium independent. 49. Vic. Emanuel II.—Italy. 55. Alexander II.—Russia. 61. Russian serfs freed. 77. War: Rus. and Turkey. 81. Alex. II. assassinated. 81. Alexander III.—Russia. 91. Russia expels Jews. 94. China-Japan War. 96. Nicholas II.—Russia. 98. Spanish-American War.
1900	01. Victoria died. 01. Edward VII. coronated. 02. Boer War concluded. 10. George V. coronated. 14. European War. 19. Treaty of Versailles. Gt. Brit. gains Ger. Colonies in S. Africa, and mandate over Palestine, Mesopotamia, etc. 21. First Imperial Confer. 21. Anglo-Japanese alliance abolished. 22. Irish Free State established. 26. Dominions become self-governing units within British Commonwealth. 29. Baldwin resigns as Premier; MacDonald succeeds. 31. Gold Standard abandoned. See Chart XII.	01. Paris Exposition. 06. Fallieres, President. 13. Poincare, President. 14. World War. 19. Treaty of Versailles. France gains Alsace-Lorraine (Europe), Cameroon, Toga (Africa), Syrian mandate. 20. Clemenceau resigns. 20. Millerand, Pres. ('20-24). 21. Briand, Premier. 22. Poincare, Premier. 24. Herriot, Premier. 24. Doumergue, President. 24. Jusserand retires. 25. Locarno Conf. Ger.-Fr. boundary settled. 26. Moroccan War ('19-26) ends. 26. Syria rebels. 29. Marshal Foch dies. 31. Doumer, President.	01-10. Great commercial and industrial expansion. 14. World War. 18. German Rev. Wm. II. abdicates. 19. Treaty of Ver. Ger. loses Alsace-Lorraine to Fr., E. territory to Pol. overseas ter. to Gt. Bt. and Japan. 19. Socialist Rev. suppressed. 19. Rep. constitution adopted. 20. Up. Schleswig unites with Denmark. 21. Up. Siles. vote belong to Germany. 24. Dawes' Repar. Plan estab. 25. Friedrich Ebert first Pres. of Ger. (7 yrs.) dies. 25. Hindenburg elected Pres. 25. Population 62,500,000. 25. Locarno Conf. Bel.-Ger.-Fr. boundaries settled. 26. Germany enters League of Nations. 27. German - Russian Treaty against engaging in war. 32. Fascisti gain, under Hitler, considerable power.	04. Russo-Japanese War. 11-13. Turco-Italian War. Tripoli ceded to Italy. 12. Civil War in China. 12-14. Balkan Wars. 15. Italy, Bulg. enter War. 17. U. S. enters World War. 17. Russia becomes Repub. 17-18. Finland, Ukraine, Esthonia, Lithuania, Latvia est. Republics. 17. Greece joins Allies. 17. Jugoslavia forms Repub. 18. Poland becomes Repub. 19. Italy gains Trentino. 19. Treaty of St. Germain. Austria reduced. 20. D'Annunzio holds Fiume. 20. Treaty of Sevres Turkey loses Smyrna, Adaria, Syria, Palestine, Mesopotamia, Armenia. 20. League of Nations est. 20. Bessarab. joins Rumania. 20. Treaty of Trianon. Hungary cedes terr. to Rumania, Czechoslovakia, Yugoslavia. 21. Fascisti control Italy. 22-23. Lausanne Treaty. Turkey regains Constantinople. 23. Spanish Military Directorate established. 24. Greece becomes Repub. 24. Turkey becomes Repub. 26. Spain withdraws. Ger. enters L. of Nations. 27. War in China continues. 29. Tacna - Arica dispute (Chile-Peru) settled. 30. Revolution in Brazil, Argentina. 31. Revolution in Peru, Paraguay. 31. Spain becomes Repub. 31-32. Japan invades Manchuria, China. 32. De Valera Pres. Irish Free State.

1001. Icelandic navigators visit the coast of New
1492. Columbus discovered America.
1497. Cabot discovered Newfoundland.
1499. Amerigo Vespucci visited America.
1512. Ponce de Leon discovered Florida.

A. D.
1600

7. First settlement in **Virginia**, at Jamestown.
9. Second Charter granted.
10. The starving time.
12. Third Charter granted.
9. I
15. Tobacco first cultivated.
19. *Slavery introduced.*
14. I
21. Cotton first cultivated.
22. Indian massacre at Jamestown.
32. **Maryland** gra
34. Settled by Catho
44. Second Indian massacre.
60. Navigation Act passed.
64. **North Carolina** settled.
64. C
76. Bacon's Rebellion.

1700

32. Washington born.
44. N
54. F
65. C
D
65. The Stamp Act.
The Virginia Resolutions.
76. Norfolk burned.
76. B
B
F
77. B
S
79. C
80. Battle of King's Mountain.
81. Battle of Guilford Court House
81. Surrender of Cornwallis.
82. Cessation of hostilities.
83. Treaty of Peace.
87. Constitution adopted.
89. Washington elected President.

CHART VI.

A. D.	England	France	Prussia and Germany	Various Countries
1600	3. James I. **House of Stuart** 11. Translation of Bible. 16 **Shakespeare** died. 25. Charles I. 26. Sir Francis Bacon died. 49. Oliver Cromwell. **The Commonwealth** 60. Stuarts restored. Charles II. 79. Habeas Corpus Act. 85. James II. 88. William Prince of Orange.	10. Henry IV. murdered. 10. Louis XIII. 20. Navarre annexed. 29. Cardinal Richelieu. 43. Louis XIV. 48. Wars of the Fronde. 50. Des Cartes died. 85. Edict of Nantes revoked. 97. Peace of Ryswick.	18. Thirty Years' War begins. 20. Battle of Prague. 30. **Kepler** died. 32. Battle of Lutzen. 40. Frederick William the Great. 48. Peace of Westphalia. 78. Peace of Nimuegen.	9. Arminius, divine, died. 11. Gustavus Adolphus of Sweden. 42. **Galileo** died.—Italy. 44. Christina crowned. 62. Catherine I. of Russia. 89. **Peter the Great** of Russia. 97. Charles XII. of Sweden.
1700	2. War with France. 13. Peace of Utrecht. 14. George I. **House of Hanover** 27. George II. 27. Sir Isaac Newton died. 29. Rise of Methodists. Wesley and Whitfield. 39. War with Spain. 46. Charles, son of Pretender, defeated at Culloden. 56. War with France. 56. Chatham, Prime Minister. 60. George III. 75. War with United States. 93. War with France. 94. Gibbon, historian, died. 96. Robert Burns died. 97. Edmund Burke died.	15. Louis XV. 38. Peace of Vienna. 48. Peace of Aix-la-Chapelle. 56. War with England. 63. Peace of Paris. 74. Louis XVI. 78. Voltaire died. 83. Peace of Versailles. 89. States General. **The Revolution** 93. Republic declared. **Reign of Terror** 95. The Directory. 97. The Consulate.	4. Battle of Blenheim. 13. Peace of Utrecht. 14. Peace of Rastadt. 22. Pragmatic Sanction. 40-48. War of the Austrian Succession. 40. **Frederic II.**, the Great. 41. Charles VII. 45. Francis I. 56. Seven Years' War begins. 65. Joseph II. 92. Francis II. 97. Frederic William III.	12. St. Petersburg founded. 25. Catherine II.—Russia. 27. Elizabeth.—Russia. 33. Franco-Polish war. 69. Clement XIV. 96. Napoleon invaded Italy. 97. Peace of Campo Formio. 98. Pius IV. deposed by Napoleon.
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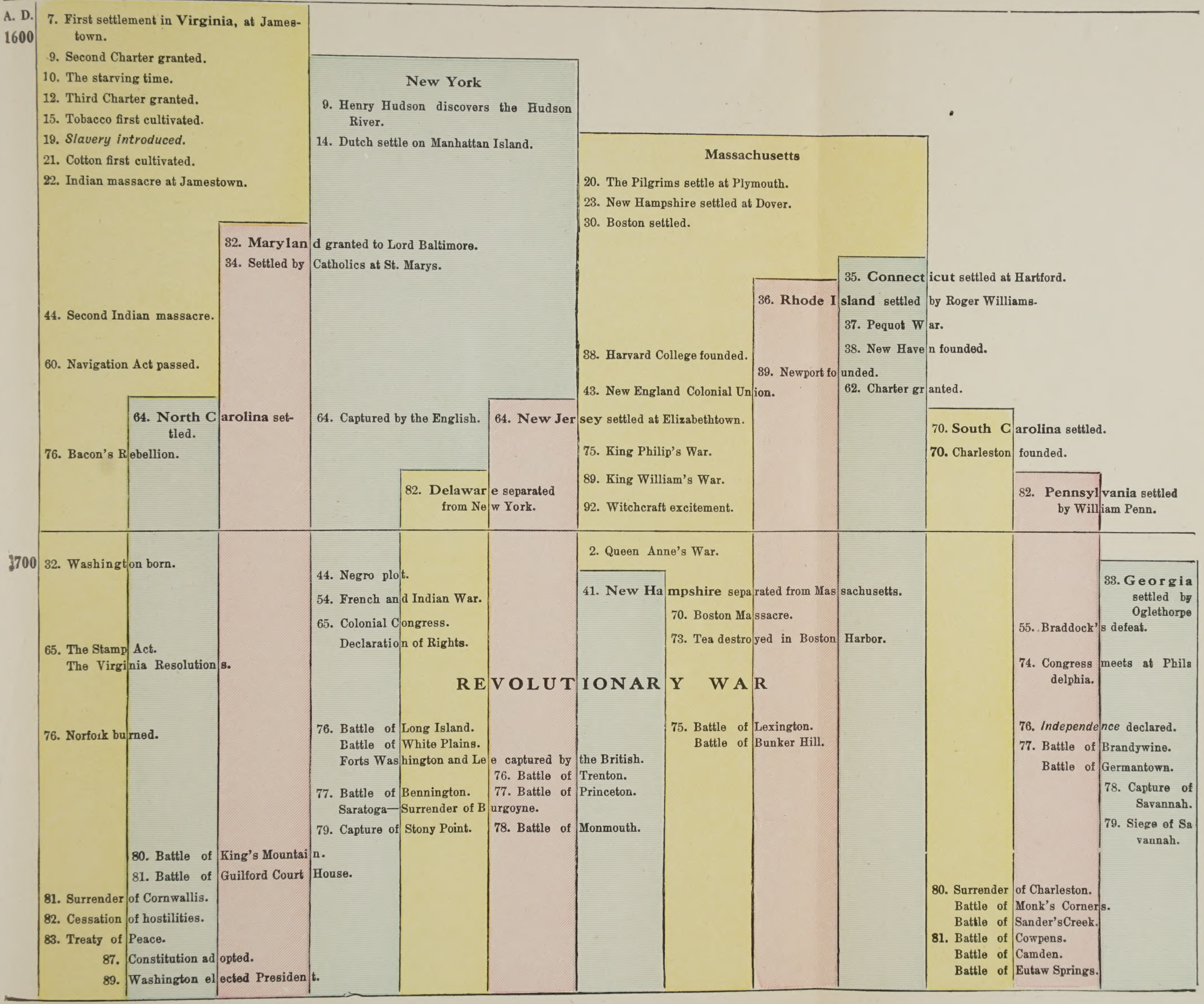
CHART VII.

1001. Icelandic navigators visit the coast of New England.
1492. Columbus discovered America.
1497. Cabot discovered Newfoundland.
1499. Amerigo Vespucci visited America.
1512. Ponce de Leon discovered Florida.
1513. Balboa discovered the Pacific.
1517. Cordova discovered Yucatan.
1521. Conquest of Mexico by Cortez.
1528. Narvaez's expedition to Florida.
1534. Cartier explores the St. Lawrence.
1541. De Soto discovers the Mississippi.
1564. Huguenots settle in Florida.
1565. Menendez founds St. Augustine.
1584-1587. Attempts to settle Roanoke Island.



A. D.
1600

7. First settlement in **Virginia**, at Jamestown.
9. Second Charter granted.

New York

9. Henry Hudson discovers the Hudson River.
10. The starving time.
12. Third Charter granted.
15. Tobacco first cultivated.
19. *Slavery introduced.*
14. Dutch settle on Manhattan Island.

Massachusetts

21. Cotton first cultivated.
22. Indian massacre at Jamestown.
20. The Pilgrims settle at Plymouth.
23. New Hampshire settled at Dover.
30. Boston settled.
32. **Maryland** granted to Lord Baltimore.
34. Settled by Catholics at St. Marys.
35. **Connecticut** settled at Hartford.
36. **Rhode Island** settled by Roger Williams.
44. Second Indian massacre.
37. Pequot War.
38. New Haven founded.
38. Harvard College founded.
60. Navigation Act passed.
39. Newport founded.
43. New England Colonial Union.
62. Charter granted.
64. **North Carolina** settled.
64. Captured by the English.
64. **New Jersey** settled at Elizabethtown.
70. **South Carolina** settled.
76. Bacon's Rebellion.
75. King Philip's War.
70. Charleston founded.
89. King William's War.
82. **Delaware** separated from New York.
82. **Pennsylvania** settled by William Penn.
92. Witchcraft excitement.

1700

2. Queen Anne's War.
32. Washington born.
33. **Georgia** settled by Oglethorpe.
44. Negro plot.
41. **New Hampshire** separated from Massachusetts.
54. French and Indian War.
70. Boston Massacre.
55. Braddock's defeat.
65. Colonial Congress.
Declaration of Rights.
73. Tea destroyed in Boston Harbor.
65. The Stamp Act.
The Virginia Resolutions.
74. Congress meets at Philadelphia.

REVOLUTIONARY WAR

76. Norfolk burned.
76. Battle of Long Island.
Battle of White Plains.
Forts Washington and Lee captured by the British.
75. Battle of Lexington.
Battle of Bunker Hill.
76. *Independence* declared.
77. Battle of Brandywine.
Battle of Germantown.
76. Battle of Trenton.
77. Battle of Princeton.
77. Battle of Bennington.
Saratoga—Surrender of Burgoyne.
78. Capture of Savannah.
79. Capture of Stony Point.
78. Battle of Monmouth.
79. Siege of Savannah.
80. Battle of King's Mountain.
81. Battle of Guilford Court House.
80. Surrender of Charleston.
Battle of Monk's Corners.
Battle of Sander's Creek.
81. Surrender of Cornwallis.
81. Battle of Cowpens.
Battle of Camden.
Battle of Eutaw Springs.
82. Cessation of hostilities.
83. Treaty of Peace.
87. Constitution adopted.
89. Washington elected President.

CHART VIII.

1789	**GEORGE WASHINGTON,** Pres't. **John Adams,** Vice-President. 90. Indian troubles in Ohio. 90. General Harmar defeated. 90. Capital removed to Philadelphia.	91. Vermont admitted. 91. St. Clair defeated. 91. United States Bank established. 92. Kentucky admitted. 93. Whitney invents cotton gin.	**George III.**
	WASHINGTON re-elected President. **John Adams,** Vice-President 93. Difficulty with Genet, French Ambassador. 94. Whisky insurrection.	94. Wayne's victory at Maumee. 95. Jay's Treaty. 96. Tennessee admitted.	**French Revolution.** 93. **Reign of Terror.**
1797	**JOHN ADAMS,** President. **Thomas Jefferson,** Vice-President. 98. War with France.	99. Washington died, aged 67. 99. Treaty with France. 1800. Capital removed to Washington.	99. Overthrow of the Directory. 99. **Napoleon Bonaparte** first Consul.
1801	**THOMAS JEFFERSON,** President. **Aaron Burr,** Vice-President. 1. War with Tripoli. 3. Ohio admitted into the Union.	3. Purchase of Louisiana. 3. Preble sent against Tripoli. 4. Hamilton killed by Burr.	4. Napoleon Emperor. 4. Irish Rebellion.
	JEFFERSON re-elected President. **George Clinton,** Vice-President. 6. Burr's Conspiracy. 7. English and French restrictions on commerce.	7. The Embargo Act passed. 7. Attack on the *Chesapeake.* 7. Fulton's first steamboat on the Hudson.	5. Battle of Austerlitz. 6. Battle of Jena. 8. Peninsular War.
1809	**JAMES MADISON,** President. **George Clinton,** Vice-President. 11. Battle of Tippecanoe. 11. Fight between the *President* and the *Little Belt.* 12. War declared against England. 12. Louisiana admitted.	12. Surrender of Mackinaw. 12. Surrender of Queenstown. **Naval Battles.** 12. The *Constitution* and the *Guerriere.* 12. The *Wasp* and the *Frolic.* 12. The *United States* and the *Macedonian.* 12. The *Constitution* and the *Java.*	9. Battle of Wagram.
	MADISON re-elected President. **Elbridge Gerry,** Vice-President, 13. Battle of Frenchtown. 13. Siege of Fort Meigs. 13. Perry's Victory. 13. Battle of the Thames. **Naval Battles.** 13. The *Hornet* and the *Peacock* 13. The *Chesapeake* and the *Shannon.* 13. The *Argus* and the *Pelican.* 13. The *Enterprise* and the *Boxer.*	14. The Creek War ended at Horse Shoe Bend. 14. Battle of Lundy's Lane. 14. Washington captured and burned. 14. Battle of Plattsburg. 14 Hartford Convention. 14. Treaty of Ghent. 15. Battle of New Orleans. 16. Indiana admitted.	15. Battle of Waterloo. Napoleon banished. 15. Treaty of Paris. **George IV.**
1817	**JAMES MONROE,** President. **Daniel Tompkins,** Vice-President. 17. Mississippi admitted. 18. The Seminole War. 18. Capture of Pensacola.	18. Illinois admitted. 19. Alabama admitted. 19. Florida purchased of Spain. 20. Maine admitted. 20. The Missouri Compromise.	
	MONROE re-elected President. **Daniel Tompkins,** Vice-President.	21. Missouri admitted. 24. Visit of Lafayette.	21. Death of Napoleon. Charles X.

CHART IX.

1825	**JOHN QUINCY ADAMS**, President. **John C. Calhoun**, Vice-President. 25. Controversy concerning removal of Creek Indians.	26. John Adams died. 26. Thomas Jefferson died.	Frederick William III.
1829	**ANDREW JACKSON**, President. **John C. Calhoun**, Vice-President. 32. Black Hawk War. 32. Excitement concerning tariff legislation.	32. Nullification in South Carolina. 32. The President vetoes the bill to recharter the United States Bank.	30. Louis Philippe. 30. Revolution in Poland. 32. Parliamentary Reform.
	JACKSON, re-elected President. **Martin Van Buren**, Vice-President. 33. Removal of public funds from the Bank of the United States.	35. Seminole War. 36. Arkansas admitted.	
1837	**MARTIN VAN BUREN**, President. **Richard M. Johnson**, Vice-Pres't. 37. Great financial revulsion.	Continuation of Seminole War. 37. Battle of Okachotee. 37. Michigan admitted.	37. **Victoria.** 40. Frederick Wilhelm IV.
1841	**WILLIAM H. HARRISON**, Pres't. **John Tyler**, Vice-President. President Harrison died April 4th, 1841. **TYLER**, President.	41. The Northwestern boundary fixed by treaty. 41. Sub-Treasury bill repealed. 41. President vetoes the United States Bank. 43. The "Dorr Rebellion" in Rhode Island.	
1845	**JAMES K. POLK**, President. **George M. Dallas**, Vice-President. 45. Florida admitted. 45. Texas annexed. 46. Iowa admitted. 46. General Taylor sent to the Rio Grande. 46. *War with Mexico* declared. 46. Battle of Palo Alto. 46. Battle of Resaca de la Palma. 46. Matamoras captured. 46. Monterey captured.	47. Battle of Buena Vista. 47. Capture of Vera Cruz. 47. Battle of Cerro Gordo. 47. Battle of Contreras. 47. Capture of Molino del Rey. 47. Capture of Chapultepec. 47 Fall of Mexico. 48. Treaty of Peace. 48. Gold discovered in California. 48. Wisconsin admitted.	48. Revolution in Hungary. 48. Republic proclaimed in France. Louis Napoleon Bonaparte elected President.
1849	**ZACHARY TAYLOR**, President. **Millard Fillmore**, Vice-President. 49. Territory of *New Mexico* organized. 50. Taylor died July 9th. **FILLMORE**, President. 50. *California* admitted into the Union.	50. Territory of *Utah* organized. 50. *Population of U. S. 23,191,876.* 51. Fugitive Slave Law enacted. 52. Henry Clay died, aged 75. 55. Daniel Webster died, aged 70.	
1853	**FRANKLIN PIERCE**, President. **W. R. King**, Vice-President. 53. The *Gadsden Purchase.*	52. Kansas-Nebraska Bill passed. 54. Kansas struggle begun. 54. Perry's treaty with Japan.	52. **Louis Napoleon,** Emperor. 54. Crimean War.
1857	**JAMES BUCHANAN**, President. **John C. Breckenridge**, Vice-Pres't. 57 Mormon insurrection. 57. Continued violence in Kansas. 57. General monetary panic.	58. *Minnesota* admitted into the Union. 59. *Oregon* admitted into the Union. 59. John Brown's raid. 60. South Carolina secedes from the Union. 60. *Population of U. S. 31,443,231*	

CHART X.

1861	**ABRAHAM LINCOLN,** President. **Hannibal Hamlin,** Vice-President. 61. Mississippi, Alabama, Florida, Georgia, Louisiana and Texas secede. 61. Kansas admitted. 61. Southern Confederacy formed. 61. Attack on Sumter. 61. Virginia, Tennessee, North Carolina and Arkansas secede and join the Confederacy. 61. Seizure of Harper's Ferry and Norfolk. 61. Battle of Philippi. 61. Union repulse at Big Bethel. 61. Battle of Bull Run. 61. Battle of Wilson's Creek. 61. Battle of Ball's Bluff. 61. Battle of Belmont. 62. Battle of Mill Spring. 62. Capture of Fort Donelson. 62. The Monitor and the Merrimac. 62. Battle of Pea Ridge 62. Battle of Shiloh. 62. Capture of New Orleans. 62. McClellan's seven days' battles. 62. Battle of Richmond, Ky. 62. Second battle of Bull Run. 62. Battle of Corinth. 62. Battle of Antietam.	62. Battle of Fredericksburg. 62. Battle of Stone River. 63. The *Emancipation Proclamation.* 63. Battle of Chancellorsville. 63. Battle of Gettysburg. 63. Surrender of Vicksburg. 63. Draft riots in New York. 63. Battle of Chickamauga. 63. Battles of Lookout Mountain and Missionary Ridge. 63. *West Virginia* admitted. 64. Wilderness Battles. 64. Battle of Spottsylvania. 64. Battle of Cold Harbor. 64. Petersburg besieged. 64. Battle of Resaca. 64. Battle of Kenesaw. 64. Battle of Atlanta. 64. Battle of Mobile Bay. 64. Battle of Winchester. 64. Battle of Fisher's Hill. 64. Battle of Cedar Creek. 64. *Nevada* admitted. 64. Sherman's march to the sea. 64. Sinking of the Alabama. 65. Capture of Fort Fisher.	61. Prince Albert died.
1865	**LINCOLN** re-elected President. **Andrew Johnson,** Vice-President. 65. Battle of Bentonsville. 65. Battle of Five Forks. 65. Capture of Petersburg. 65. Fall of Richmond. 65. *Surrender of Lee.* 65. Surrender of Johnston. 65. *Lincoln Assassinated,* April 14.	**ANDREW JOHNSON,** President. 66. The Atlantic Cable laid. 66. Tennessee readmitted. 67. *Nebraska* admitted. 67. Purchase of Alaska. 67. Fourteenth Amendment adopted. 67. Amnesty proclamation. 68. Impeachment of President Johnson.	65. Fenian insurrection in Ireland. 66. Austro-Prussian War. 66. North German Confederation formed.
1869	**ULYSSES S. GRANT,** President. **Schuyler Colfax,** Vice-President. 69. Pacific Railroad completed. 70. Fifteenth Amendment adopted. 70. *Population of U. S. 38,558,371.* 71. Chicago burned.	72. Settlement of the *Alabama Claims.* 72. Settlement of the *Northwestern Boundary.* 72. William H. Seward died, aged 71. 72. Horace Greeley died, aged 61.	70-71. Franco-Prussian War. 71. Battle of Sedan. Napoleon III. overthrown. 72. King William proclaimed Emperor. Rise of French Republic. **Thiers,** President.
1873	**GRANT** re-elected President. **Henry Wilson,** Vice-President. 73. The Modoc War. 73. The great financial panic.	76. The Custer Massacre. 76. *Colorado* admitted. 76. The *Centennial Exhibition.*	
1877	**RUTHERFORD B. HAYES,** Pres't. **William A. Wheeler,** Vice-Pres't. 77. The Nez Perce War.	77. The Remonetization of Silver. 79. Resumption of Specie Payments. 80. *Population of U. S. 50,182,525.*	77. Russo-Turkish War. Fall of Turkish power in Europe.
1881	**JAMES A. GARFIELD,** President. **Chester A. Arthur,** Vice-President. 81. President Garfield shot, July 2, by Charles J. Guiteau.	81. His death, September 19. **CHESTER A. ARTHUR,** President. 82. Trial and sentence of Guiteau.	81. Alexander II. of Russia assassinated.

CHART XI

1885	**GROVER CLEVELAND**, President. **Thomas A. Hendricks**, Vice-Pres't.	85. Gen. U. S. Grant died, July 23. 86. Haymarket riot, Chicago.
1889	**BENJAMIN HARRISON**, President. **Levi P. Morton**, Vice-President. 89. Washington admitted. 89. Montana admitted. 89. North and South Dakota admitted.	90. Idaho admitted. 90. Pan-American Congress. Behring Sea arbitration. Wyoming admitted.
1893	**GROVER CLEVELAND**, President. **Adlai E. Stevenson**, Vice-President. 93. Wilson tariff measure. 93. Commercial and monetary panic.	93. World's Columbian Exposition at Chicago. 94. Railroad riots at Chicago. 96. Venezuelan imbroglio.
1897	**WILLIAM McKINLEY**, President. **Garrett A. Hobart**, Vice-President. 98. Hawaii annexed. 98. Battleship *Maine* destroyed at Havana, February 15. War with Spain declared, April 25. Naval Victory, Manila Bay, May 1. Battle of San Juan and El Caney, July 1.	98. Naval Victory at Santiago, July 3. Surrender of Spanish Army, Santiago. Manila surrendered. Treaty of Peace signed at Paris, Dec. 10. Porto Rico, the Philippines and Guam ceded to the U. S. Filipino revolt. 1900. Galveston destroyed by hurricane. Population of U. S., 76,303,387.
1901	**WILLIAM McKINLEY**, President. **Theodore Roosevelt**, Vice-President. President McKinley shot Sept. 6, died Sept. 14. **THEODORE ROOSEVELT**, President. Civil Government in the Philippines inaugurated July 4.	02. Cuban Government organized. 03. Dept. Commerce and Labor established. 03. Alaskan Boundary settled. 04. Panama Canal Treaty. 05. Mediation ends Russo-Japanese War.
1905	**THEODORE ROOSEVELT**, President. **Chas. Warren Fairbanks**, Vice-Pres't. 06. San Francisco destroyed by earthquake and fire. 06. Cuban revolt and intervention by U. S.	06. Pure food law passed. 07. Oklahoma admitted. 07. Financial panic. 08. Grover Cleveland died.
1909	**WILLIAM HOWARD TAFT**, Pres't. **James S. Sherman**, Vice-President. 09. North Pole reached by Robert E. Peary. 10. Population of United States, 91,972,266. 10. Postal Savings Banks established.	12. New Mexico and Arizona admitted. 12. Parcel Post established. 12. Titanic Disaster. 13. Dept. of Labor established.
1913	**WOODROW WILSON**, President. **Thomas R. Marshall**, Vice-President. 13. Chinese Republic recognized. 13. Seventeenth Amendment (Popular election of Senators).	13. Tariff revised. 13. Federal Income Tax law passed. 14. Federal Trade Commission established.
1917	**WOODROW WILSON**, President. **Thomas R. Marshall**, Vice-President. 17. Germans declare Unrestricted Submarine Warfare.	17. War with Germany. 18. Armistice signed Nov. 11. 19. Death of Ex-President Roosevelt. 19. Prohibition Amendment Ratified.
1921	**WARREN G. HARDING**, President. **Calvin Coolidge**, Vice-President. 21. Washington Limitation of Armaments Conference.	22. Federal Budget System established. 22. Peace Treaties signed with Germany and Austria. 23. President Harding died, Aug. 2.
1923	**CALVIN COOLIDGE**, President. 24. Adjusted Compensation Law passed. 24. Teapot Dome Oil Inquiry. 24. Limitation of Immigration to 2% on 1910 census, with total exclusion of Oriental races.	24. Dawes' Debt Fund. Com. appointed. 24. Ex-President Wilson died, Feb. 3.
1925	**CALVIN COOLIDGE**, President. **Charles G. Dawes**, Vice-President. 25. Italian debt settlement made.	27. Dedication Am.-Canad. Peace Bridge. 27. Great Mississippi River flood. 28. Kellog Anti-War Pact signed (62 nations).
1929	**HERBERT HOOVER**, President. **Charles Curtis**, Vice-President. 29. Premier MacDonald visits Hoover. 29. **Financial** depression begins; world wide.	30. Ex-President Taft dies. 30. Chas. E. Hughes made Chief Justice of the Supreme Court. 31. War debt moratorium passed; National Credit Co. organized. 31. Edison dies. 32. Government seeks to alleviate financial depression.

88. William I., Germany died March 9.
Frederick III. of Germany died June 15.
William II., Emperor.
94. President Carnot of France assassinated.
97. War between Turkey and Greece.
King Humbert of Italy assassinated July 29, 1900.
1900. Boxer rising in China.
Partition of Samoa.
Boer War.
Queen Victoria died Jan. 22, 1901.
Edward VII., King.
01-02. Boer War continued.
03. Panama established.
04. Russo-Japanese War.
05. Russo-Japanese War ends.
05. Union of Sweden and Norway dissolved.
Prince Charles of Denmark becomes King of Norway as Haakon VII.
06. First Russian Douma.
06. Frederick VII., King of Denmark.
08. Bulgarian independence declared.
08. Messina and Reggio destroyed by earthquake; 76,483 lives lost.
09. Turkish Revolution. Abdul Hamed II. deposed. Mehmed V. Sultan.
10. Edward VII. of England dies. George V., King.
10. Portuguese Republic established.
10. South African Union formed.
11. South Pole reached by Amundsen.
11. Revolution in Mexico.
12. Chinese Republic proclaimed.
12. Christian IX. of Denmark dies. Christian X., King.
14. Francis Ferdinand assassinated.
14. Great War begins.
17. Russian Revolution.
17. Constantine I. of Greece deposed.
17. English capture Jerusalem.
18. Great War ends. (Surrender of Russia, Mar. 2; Roumania, Mar. 4; Bulgaria, Sept. 30; Turkey, Oct. 31; Austria, Nov. 3; Germany, Nov. 11.)
19. Peace treaty, including League of Nations, signed.
21. Egypt granted independence.
22. Mussolini, Fascist leader, Premier of Italy.
23. Greatest earthquake of modern times in Tokyo region, Japan.
23. Mustapha Kemal Pasha elected President Turkish Republic, Oct.
24. Nikolai Lenin, head of Soviet Russia, died Jan. 22.
24. Greece declared herself Republic.
24. Labor Government held office in Great Britain for first time. Ramsay MacDonald, Premier.
25. President Ebert of Germany dies.
25. Soviet Russia grants further private ownership of industry and land.
25. Locarno Peace Treaties signed.
25. Spain Directorate abolished.
25. Boundary disagreements between Irish Free State and North Ireland settled.
26. Amundsen and Byrd fly over North Pole.
27. War in China continues.
27. Canada celebrates 60 years of Confederation.
27. World Economic Conference.
27. King Ferdinand of Roumania dies.
27. Lindbergh and others make trans-Atlantic flights.
27. Am.-British-Japanese naval limitation conference unsuccessful.
28. Great Britain breaks off diplomatic relations with Russia.
29. Graf-Zeppelin makes Round World flight.
30. Byrd South Pole exploration by air successful.
30. France withdraws from the Ruhr (Germany).
30. London Naval Conference.
31. Spain becomes Republic.
31. Japan invades Manchuria, Shanghai.
32. De Valera, Pres. Irish Free State.

CHART XII.

1500 **French Period** 1600 1700

1497. Cabot discovered Newfoundland. 1498. Sebastian Cabot discovered Hudson Strait. 1500. Cortereal entered Gulf of St. Lawrence. 1518. Baron de Levy visited Sable Island. 1524. Verazzano explored coast of Nova Scotia.	34. Jacques Cartier — first landing on Canadian soil. 35. Cartier's second voyage — visits Stadcona (Quebec) and Hochelaga (Montreal). 76-78. Frobisher explores Arctic Canada. 85. John Davis discovered Davis Strait. 98. Marquis de la Roche lands convicts on Sable Island.	04. DeMonts and Champlain on coast of Nova Scotia. 05. Port Royal founded by Poutrincourt. 08. Quebec founded by Champlain. 09. Champlain defeated Iroquois and discovered Lake Champlain. 10. Henry Hudson explores Hudson Bay. 11. Jesuits arrive in Acadia. 13. St. Johns, Newfoundland, founded. Port Royal destroyed by Argall. 16. Wm. Baffin explores Baffin's Bay. 17. Iroquois invade Canada. 23. English in Nova Scotia. 29. Capture of Quebec by English. 32. Treaty of St. Germain. Quebec restored to France. 35. Lake Michigan discovered by Nicollet. 40. Lake Erie discovered by Jesuits. 42. Montreal founded. 54. Acadia taken by English. 55. Treaty of Westminster. Canada and Acadia restored to France. 68. Pere Marquette founded Mission at Sault Ste. Marie. 70. Hudson Bay Company founded. 89. Lachine massacre. 90. Phipps captures Port Royal— is repulsed at Quebec. 91. Schuyler's raid into Canada. 96. Nova Scotia made royal province. 98. Population of Canada 18,355.	09-11. Canada invaded by Engl Port Royal taken by Nic son. 13. Treaty at Utrecht. Louisb founded. 19. First government founded English in Nova Scotia. 45. Louisburg captured. 48. Louisburg restored to Fr by Treaty of Aix-la-Chape 49. Halifax founded. 55. Expulsion of Acadians. 58. Representative government tablished in Nova Scotia **Seven Years' War.** 58. Capture of Louisburg English. 58. Battle of Ticonderoga. 59. Siege of Quebec; defeat French on Plains of A ham by General Wolfe; render of Quebec. 60. Capitulation of Montreal. 63. Treaty of Paris. Canada all its dependencies rendered to English.
	England 09. Henry VIII. 53. Bloody Mary. 58. Elizabeth. 87. Mary Queen of Scots beheaded. **France** 15. Francis I. 47. Henry II. 59. Francis II. 62. Huguenot War. 74. Henry III. 89. Henry IV.	**England** 03. James I. 11. Translation of Bible. 49. Oliver Cromwell. The Commonwealth. 60. Charles II. 85. James II. 88. William, Prince of Orange. Milton. Locke. **France** 10. Louis XIII. 29. Cardinal Richelieu. 43. Louis XIV. 48. Wars of the Fronde. 87. Peace of Ryswick. **Germany** 18. Thirty Years' War begins. 40. Frederick William the Great. 48. Peace of Westphalia.	**England** 02. War with France. 18. Peace of Utrecht. 14. George I. 29. George II. 39. War with Spain. 46. Charles, son of Pretend defeated at Culloden. 56. War with France. 60. George III. 75. American Revolution. 93. War with France.

CHART XII.

English Period

Pop. 1763 about 60,000.

Conspiracy of Pontiac.

Montreal partly destroyed by fire.

Prince Edward Island made a separate province.

Quebec Act.

American Revolution. Invasion of Canada by Americans. Montgomery defeated at Quebec.

Treaty of Versailles. Canadian southern boundary established.

New Brunswick and Cape Breton made separate provinces.

Constitutional Act. Province divided into **Upper** and **Lower Canada**. Pop. 161,811.

Toronto founded.

France

Louis XV.

Peace of Vienna.

Peace of Aix-la-Chapelle.

Peace of Paris.

Louis XVI.

Peace of Versailles.

The Revolution.

Various Countries

8. War of Austrian Succession.

Frederick II. the Great.

Seven Years' War.

Catherine I., Russia.

Elizabeth, Russia.

War between France and Poland.

Napoleon invaded Italy.

1800

09. First steamboat on St. Lawrence.

12. **War of 1812.**

12. Surrender of Detroit.

12. Americans repulsed at Queenston and at Odelltown.

13. Battle of Frenchtown.

13. Capture of Ogdensburg.

13. Battle of Stony Creek.

13. Battle of Lake Erie.

13. Battle of Moraviantown.

13. Battle of Chateaugay.

13. Battle of Chryslers Farm.

13. Capture of Fort Niagara.

14. Battle of La Colle Mill.

14. Fort Erie taken.

14. Battle of Chippewa.

14. Battle of Lundy's Lane.

14. Family Compact.

16. Common schools established in Upper Canada.

25. Miramichi fire.

33. "Royal William," first steamboat crossed the Atlantic from Quebec.

37-38. Papineau's Rebellion.

37-38. Mackenzie's Rebellion.

41. Upper and Lower Canada united.

42. Ashburton's Treaty, settling boundary dispute.

58. Capital removed to Ottawa.

58. Atlantic Cable laid.

64. Quebec conference.

66. Fenian invasion.

67. Confederation formed and Dominion proclaimed.

England

05. Battle of Trafalgar.

07. Slave trade abolished.

08. Peninsular War.

14. Peace with France.

15. War with Napoleon renewed.

20. George IV.

29. William IV.

37. Victoria crowned.

54. Crimean War.

57. Mutiny in India.

67. War with Abyssinia.

97. Queen's diamond jubilee.

99. Boer War.

Dominion of Canada

67. Original Confederation.
Ontario, area 260,862 Sq. M.
Quebec, " 351,873 Sq. M.
Nova Scotia, 21,428 Sq. M.
New Brunswick, 27,985 Sq. M.
Lord Monck, first Governor-general.

69. Red River Rebellion.

70. Northwest territories added to Dominion.

70. **Manitoba** admitted.

70. Fenian raid.

71. Treaty of Washington.

71. **British Columbia** admitted.

71. First Dominion Census.
Pop. four provinces, 3,485,761
Manitoba, 18,995
British Columbia, 36,247
Prince Edw. Island, 94,021
Total, 3,635,024

73. **Prince Edward Island** admitted.

76. Keewatin Territory created; area 470,416 sq. miles.

77. Halifax fisheries award.

80. All British America except Newfoundland annexed to Dominion.

82. Districts of Assiniboia, Saskatchewan, Alberta and Athabasca created.

85. Saskatchewan Rebellion.

85. Canadian Pacific Railway completed.

95. Districts created from unorganized territory.
Ungava, area 354,961 Sq. M.
Franklin, " 500,000 Sq. M.
Mackenzie, " 562,182 Sq. M.
Yukon, " 196,976 Sq. M.

97. Behring Sea award, $464,000.

98. Yukon made a territory.

Various Countries

04. Bonaparte, emperor.

04. Francis II. of Austria.

14. Louis XVIII. of France.

15. Waterloo. Napoleon overthrown.

48. Hungarian War. Francis Joseph of Austria.

52. Napoleon III.

61. Alexander II. of Russia emancipates serfs.

70. War between Germany and France.

71. William I., Emperor of Germany.

71. Republic of France.

88. Frederick III. of Germany.

88. William II. of Germany.

94. China-Japan War.

98. Spanish-American War.

1900

01. Australian Federation completed.

02. First message by Pacific cable from Australia.

03. Alaskan boundary settlement.

03. Grand Trunk Pacific railway 5,000 miles long projected.

04. Dominion exhibition in Winnipeg.

03. Earl Grey appointed Governor-General.

05. Provinces of Alberta and Saskatchewan created out of Northwest territories.

08. Government sustained in elections involving railway and development policies.

11. Borden elected Premier.

11. Duke of Connaught appointed Governor-General.

12. Boundaries of Manitoba, Ontario, Quebec and Northwest Territories enlarged; Ungava, Franklin and Mackenzie absorbed.

16. Conscription Law passed.

16. Prohibition in Ontario.

19. Treaty of Versailles.

19. Entered League of Nations.

21. Wm. Mackenzie King, Premier.

24. Non-Participation in Imperial Conference.

24. First Independent Treaty with Foreign Power.

26. First Ambassador to Washington, by agreement 1920.

26. Viscount Willingdon, Gov.-Gen.

27. Diamond Jubilee: 60 years Dominion status.

27. U.S.-Canadian Peace Bridge Ceremony.

30. Est. pop., 9,934,500.

30. Prime Min., Richard B. Bennett.

31. Gov.-Gen. Rt. Hon. Earl of Bessborough.

England

01. Victoria died.

01. Edward VII. King.

02. Boer War ended.

10. Ed. VII. died. George V. King.

10. South African Union formed.

11. Anglo-Jap. Alliance renewed.

11. Anglo-Am. Arbitration Treaty.

11. Lord's Veto Power abolished.

12. Colonial Defense Conference.

14. War with Germany.

15. Liberal Gov't. Premier Asquith.

16. Liberal Coalition Gov't. Premier George.

17. Irish Convention.

17. Imperial War Conference.

17. Palestine to England.

18. Woman Suffrage.

19. Versailles Treaty.

20. Treaty with Turkey.

21. Imperial Conference.

21. Anglo-Jap. Alliance abolished.

21. Ulster Parliament.

22. Egyptian Protect. abolished.

22. Irish Free State established.

22. Conser. Gov't. Premier Law.

23. Conser. Gov't. Prem. Baldwin.

24. Lab. Gov't. Prem. MacDonald.

24. Conser. Gov't. Prem. Baldwin.

26. Labor strike of 2,525,000 men.

26. Dominions become self-governing units within British Commonwealth of Nations.

27. U.S.-British-Japanese Naval Limitation Conference fails.

29. Labor Government, Premier MacDonald.

31. Gold Standard abandoned.

CHART XIII

	CENTRAL POWERS AUG. 1, 1914 (Germany Austria Turkey Bulgaria)	RUSSIA AUG. 1, 1914	FRANCE AND BELGIUM AUG. 4, 1914
1914	June 28 **Francis Ferdinand Assassinated.** July 23 **Austro-Hungarian Ultimatum.** 28 **War declared on Serbia.** Aug. 1 **Germany declares war on Russia.** 2 **German troops invade France.** 4 **Germany declares war on Belgium.** 4 **England declares war on Germany.** 8 Germans take Liege. 20 Germans take Brussels. 23 **Japan declares war on Germany.** Sep. 1 Germans cross the Marne. 6 Germans defeated at the Marne. 14 Aisne battle in France begins. 15 Battle of Soissons. Oct. 10 Germans take Antwerp. 29 **Turkey joins Germany.** Nov. 7 Japanese take Tsingtao. 9 British sink the Emden.	July 31 **Russia mobilizes army.** Aug. 1 **Germany declares war.** 2 **Russia invades Germany.** 23 **Russians win in East Prussia.** 29 **Germans defeat Russians at Allenstein.** Sep. 2 **Russians take Lemberg.** 20 **Russians besiege Przemysl.** 29 Turkey declares war. Dec. 11 **German advance on Warsaw checked.**	Aug. 1 **France mobilizes army.** 2 Germans enter France. 4 **Germany declares war.** 8 Germans take Liege. 20 Germans take Brussels. 29 Germans 65 miles from Paris. Sep. 1 **Germans cross the Marne Paris 55 m.** 2 Government transferred to Bordeaux. 6 **French win at Marne.** 14 Battle of the Aisne. 15 Battle of Soissons. Oct. 10 **Germans take Antwerp.** 12 Germans take Ghent. 20 Battle of Yser.
1915	Feb. 12 Russians driven from E. Prussia. 22 **Hindenburg victories** (Mazurian Lakes) (Feb. 12-22.) May 23 **Italy declares war.** June 28 Italians invade Austria. July 13 Germans defeated in the Argonne. Oct. 5 **Bulgaria joins Germany.**	Jan. 29 Russians invade Hungary. Feb. 4 Russians take Tarnow. 12 Russians lose 26,000 prisoners. 22 Mazurian Lakes defeat. Mar. 22 **Russians take Przemysl.** 25 Russians defeat Austrians in Carpathians. June 3 **Germans retake Przemysl.** Aug. 4 **Germans take Warsaw.**	Jan. 29 German repulse at Aisne. Mar. 10 Battle of Neuve Chappelle. 18 Bouvet and 2 British battleships sunk in Dardanelles. May 9 French take 2,000 Germans at Arras. Sep. 25 Great allied advance (Sep. 25-30).
1916	Feb. 22 Crown Prince attacks Verdun. May 31 German navy defeated off Jutland. Oct. 8 Germans sink 6 British vessels off Nantucket, Mass. Nov. 1 Austrians lose heavily on Carso. 8 Transylvania (Austria) invaded. 9 Austro-Germans defeat Russians. 19 Germans invade western Roumania.	Nov. 8 Russians invade Transylvania. 9 Russians severely defeated in Volhynia. Dec. 27 Russians defeated in Roumania.	Feb. 22 **Crown Prince attacks Verdun.** July 1 French and British begin great offensive on the Somme. 27 British take Delville Wood. Aug. 2 French take Fleury. 4 French recapture Thiaumont. 24 French occupy Maurepas. Sep. 14 **British introduce "tanks."** Oct. 24 French advance 2 miles. Nov. 7 Cardinal Mercier protests deportation of Belgians. Dec. 15 French take 11,000 at Verdun.
1917	Jan. 31 **Germany resumes submarine warfare.** Feb. 3 **United States severs diplomatic relations.** 28 Anti-United States intrigue in Mexico exposed. Mar. 17 French and British take Bapaume. April 6 United States declares war. Oct. 16 Germans occupy islands in Gulf of Riga	Mar. 11 Revolution starts in Petrograd. 15 Revolution accomplished. Czar abdicates. Nov. 28 **Bolsheviki in full control.**	Mar. 17 French and English take Bapaume. April 9 British take Vimy Ridge and 6,000 prisoners. June 13 Pershing and staff arrive in Paris. 26 First American troops landed. Sep. 20 Haig advances a mile at Ypres. Oct. 25 French take 12,000 prisoners on Aisne front. 27 Americans fire first shots.
1918	Mar. 21 **Last German drive begins.** April 16 Germans take Messines Ridge. 26 Germans take Mt. Kemmel. May 5 New Austrian drive. June 15 Austrians take 16,000 Italians. 22 **Austrians crushed on Piave.** July 30 Crown Prince retreats from Marne. Sep. 30 **Bulgaria surrenders.** Oct. 6 Germans ask armistice through Wilson. 18 Czecho-Slovak republic proclaimed 27 **Germans ask for terms.** 30 Austrians driven from Italy. 31 **Turkey surrenders.** Nov. 8 **Austria surrenders.** 9 Kaiser abdicates. 11 **Germany surrenders to Allies.**	Mar. 3 **Peace of Brest-Litovsk signed.** Apr. 5 Vladivostok occupied by British and Japanese. July 16 Nicholas II executed. August Allied invasion from Archangel begins.	Mar. 21 **German drive begun.** 28 French take 3 towns. April 16 Germans take Messines Ridge. 26 Germans take Mt. Kemmel. May 28 Germans take 15,000. 29 Germans take Soissons. 30 **Germans again reach the Marne.** June 12 French and American counter attack. July 18 **Foch launches great allied offensive.** 30 Crown Prince retreats from Marne. Aug. 2 Soissons recaptured. Sep. 28 Allies win on 250-mile line. 29 Allies cross Hindenburg line. Oct. 17 Allies take 5 cities. Nov. 11 **Germany surrenders to Allies.**
1919	Jan. 15 Liebknecht shot. Feb. 16 Constituent Assembly meets atWeimar June 28 **Treaty of Versailles signed.** Aug. 21 Ebert becomes first president of German republic.	Oct. 2 **Archangel expedition abandoned.** Nov. 15 Kolchak's government collapses. Dec. 31 **Armistice between Russia and Esthonia.**	Oct. 2 Treaty of Versailles ratified. Nov. 16 General election for Chamber of Deputies.
1920	Jan. 10 Treaty of Versailles in force. Mar. 14 Schleswig plebiscite. Mar 13 Kapp's Putsch in Berlin. July 11 East and West Prussia plebiscite.	Jan. 21 Death penalty abolished. Aug. 11 Wrangel government recognized by France.	Jan. 16 Deschanel president. Jan. 18 **Clemenceau resigns premiership.** Feb. 20 Poincare president of Reparations Commission. Sep. 23 Millerand elected president.
1921	Aug. 26 Erzberger assassinated. Oct. 7 **Rathenau-Loucheur agreement on reparations.** 10 Upper Silesia divided between Germany and Poland.	Mar. 16 Treaty with Turk nat'alists. 18 Treaty of Riga, with Poland. Oct. 28 Tchitcherin note offers conditional recognition of pre-war debts. **Famine throughout the year**	Jan. 16 Briand ministry formed. Mar. 8 **French troops occupy Ruhr basin.** Oct. 20 Treaty with Turk nationalist government at Angora. 1924-30. France gradually withdraws from Ruhr.

CHART XIV

	ENGLAND AUG. 4, 1914	ITALY, MAY 23, 1915	UNITED STATES, APRIL 6, 1917	OTHER COUNTRIES
1914	Aug. 3 **British fleet mobilized.** 4 **War declared on Germany.** 8 **Troops landed in France.** 28 **English naval victory near Helgoland.** Nov. 29 **German cruiser Emden sunk.** Dec. 16 **Germans bombard coast towns.**	Aug. 5 Germany asks Italy's help.	Aug. 4 **President's neutrality proclamation.**	Enter War: Austria, Serbia, Germany, Russia, France, Belgium, England Montenegro, Japan, Turkey.
1915	Jan. 1 British battleship Formidable sunk. 24 **British win in North Sea.** Feb. 8 **British attack Dardanelles.** 18 **German submarine blockade begun.** 28 Dardanelles ports taken. Mar. 14 German cruiser Dresden sunk. May 7 **Lusitania sunk.** Sep. 9 German air raid kills 20; wounds 100. Oct. 12 Germans execute Edith Cavell. Dec. 1 British reverse near Bagdad. 15 **Haig succeeds French.**	April 16 Italy mobilizes 1,200,000 men. May 23 **Italy declares war on Austria.** June 28 **Italians enter Austria.**	May 12 President's three Lusitania notes (May 13-July 21) Germany warned. Sept. 1 **Germany promises cessation of ruthless submarine war.** 9 Austrian ambassador recalled.	Enter War: Italy, San Marino, Bulgaria. Sep. 20 German drive on Serbia begun. (To open route to Turkey.)
1916	Jan. 9 **Dardanelles campaign abandoned.** April 24 Insurrection in Dublin. 29 British surrender 10,000 at Kut-el-Amara. May 31 **Jutland battle puts German navy out of war.** July 6 **Lloyd George made war secretary.** Sep. 14 **British introduce "tanks."** Dec. 7 **Lloyd George Premier.** 19 **Lloyd George declines German Peace.**	May 13 **Great Austrian drive in Trentino.** Aug. 9 **Italians take Goeritz.** Sep. 15 Italians begin offensive on Carso.	Mar. 24 Sussex sunk, Americans lost. President again demands cessation unrestricted submarine warfare. May 4 Germany promises cessation. Oct. 8 Germans sink 6 British ships off Nantucket, Mass.	Enter War: Portugal, Roumania. Mar. 8 Germany declares war on Portugal. Aug. 27 Roumania joins Allies. Dec. 8 Roumanian army crushed.
1917	Jan. 31 Germany renews submarine warfare. Feb. 25 British recapture Kut-el-Amara. Mar. 11 British take Bagdad. 17 French and British take Bapaume. 27 British defeat Turks near Gaza. April 9 British take 6,000 at Vimy Ridge. Sep. 20 Haig wins at Ypres. Dec. 8 **British take Jerusalem.**	Aug. 25 Italians break through on Isonzo. Oct. 29 **Great Teuton drive. Italian front crushed.**	Jan 31 Germany announces renewal submarine piracy. Feb. 3 **United States breaks with Germany.** April 6 **United States declares war.** 28 **First Draft Act.** June 5 Nearly 10,000,000 register. 13 Pershing arrives in France. 26 First American troops in France. July 9 Food and fuel under federal control. Aug. 28 Pope's peace plea rejected. Oct. 27 First shots fired in France.	Enter War: Panama, Greece, United States, Cuba, Siam, Liberia, China, Brazil.
1918	April-May German drive against British. Aug. 8-Sep. 11 Allied victory in Picardy and Flanders. Oct. 22 Haig crosses Scheldt. Nov. 11 **Germany surrenders to Allies.** Dec. 14 General election.	May 5 New Austrian drive begins. Nov. 8 Austria surrenders to Italy. Nov. 11 **Germany surrenders to Allies.**	Mar. 21 Germans launch great offensive. July 18 **Foch counter offensive launched.** Oct. 5-Nov. 5 President Wilson treats with Germans. Nov. 11 **Germany surrenders to Allies.**	Mar. 4 Roumania makes peace.
1919	Jan. 18 **Peace Conference begins.** Sep. 26 National railway strike begins; lasts ten days.	Sep. 10 Treaty of peace with Austria signed. 12 D'Annunzio seizes Fiume.	June 28 Peace treaty of Versailles, including League of Nations, signed.	Aug. 11 Constitution of German republic in force.
1920	Oct. Fortnight's coal miners' strike. Nov. 11 Irish Home Rule Bill passed.	April 17 San Remo Conference. Aug. 10 Treaty of Sevres with Turkey. Communist and agrarian disorders throughout year; Fascisti appear.	Jan. 16 Prohibition amendment adopted. Aug. 26 Woman Suffrage Amendment adopted. Nov. 2 W. G. Harding elected president.	Mar. 12-16 Monarchist revolt in Germany uppsressed. Dec. 5 King Constantine recalled to Greek throne.
1921	Oct. 11 Irish Conference begins. Dec. 6 **Agreement signed providing for Irish Free State.**	July 26 General strike in Rome. Sep. 7 D'Annunzio's troops leave Fiume. Dec. 26 Commercial treaty with Russia.	Nov. 11 Limitation of Armament Conference opens. Dec. 13 Four-Power Treaty signed 1928-29. Kellogg-Briand Anti-War Treaty (64 nations) negotiated.	Nov. 6 Congress of All India adopts Gandhi resolution for non-cooperation.

CHRONOLOGY OF THE GREAT WAR

1914

June 28—Archduke Ferdinand assassinated.

July 28—Austria declares war on Serbia.

Aug. 1—Germany declares war on Russia. France mobilizes.

2—Germans enter France. Russian troops enter Germany.

3—British fleet mobilizes.

4—France declares war on Germany; Germany declares war on Belgium; Great Britain on Germany. U. S. proclaims neutrality.

7—Germans defeated at Altkirch.

8—Germans capture Liege. British land troops in France.

12—Montenegro declares war on Germany.

20—Germans enter Brussels.

23—Japan declares war on Germany. Russia victorious in battles in East Prussia.

24—Japanese warships bombard Tsingtao.

28—English defeat German fleet near Helgoland.

29—Germans defeat Russians at Allenstein; occupy Amiens; advance to La Fere, sixty-five miles from Paris.

Sept. 1—Germans cross Marne.

2—Government of France transferred to Bordeaux. Russians capture Lemberg.

5—England, France, and Russia sign pact to make no separate peace.

6—French win battle of Marne.

14—Battle of Aisne. German retreat halted.

15—First battle of Soissons.

20—Russians capture Jaroslau and begin siege of Przemysl.

Oct. 9-10—Germans capture Antwerp.

29—Turkey begins war on Russia.

Nov. 7—Japanese take Tsingtao.

9—Cruiser Emden destroyed.

Dec. 14—Belgrade recaptured by Serbians. Total Austrian losses, 100,000.

16—German cruisers bombard Scarborough, Hartlepool and Whitby, undefended towns on English coast, killing fifty civilians.

25—Italy occupies Avlona, Albania.

1915

Jan. 1—British battleship Formidable sunk.

8—Violent fighting in the Argonne.

11—Germans thirty miles from Warsaw.

24—British win in North Sea.

29—Russian army invades Hungary.

Feb. 1—British repel strong German attack near LaBasse.

4—Russians capture Tarnow.

8—Turks at Dardanelles shelled by British.

11—Germans evacuate Lodz.

Feb. 12—Germans drive Russians from positions in East Prussia, taking 26,000 prisoners.

14—Russians capture fortifications at Smolnik.

16—French capture two miles of German trenches.

18—Germans blockade English and French coasts.

19—British and French fleets bombard Dardanelles.

21—American steamer Evelyn sunk by mine.

22—German war office announces capture of 100,000 Russian prisoners in ten days in Mazurian Lakes region. American steamer Carib sunk by mine.

28—Dardanelles entrance forts capitulate.

Mar. 4—Allies land troops on both sides of Dardanelles.

10—Battle of Neuve Chapelle begins.

14—Dresden sunk by English in the Pacific.

18—British battleships sunk in Dardanelles.

22—Prussians take Przemysl.

23—Allies land troops on Gallipoli peninsula.

25—Russians defeat Austrians.

April 16—Italy mobilizes 1,200,000 men. Austrians defeat Russians.

23—Germans force way across Ypres Canal and take 1600 prisoners.

25—Allies stop German drive on Ypres line.

29—British report regaining of two-thirds of lost ground in Ypres battle.

May 7—Lusitania torpedoed.

9—French advance north of Arras.

23—Italy declares war on Austria.

June 3—Teutons recapture Przemysl.

26—Italians enter Austrian territory south of Riva.

July 3—Italians capture Tolmino.

9—British make gains north of Ypres and French retake trenches in the Vosges.

13—Germans defeated in the Argonne.

29—Warsaw evacuated by Russians; Lublin captured by Austrians.

Aug. 4—Germans occupy Warsaw.

14—Austrians and Germans concentrate 400,000 soldiers on Serbian frontier.

Sept. 1—Germans promise to sink no more liners without warning.

4—German submarine torpedoes British liner Hesperian.

9—Germans make air raid on London, killing twenty persons and wounding 100 others.

—Ambassador Dumba recalled.

20—Germans begin drive on Serbia.

22—Russian army escapes German encircling movement.

Sept. 25-30—Battle of Champagne, resulting in great advance for Allied armies.
Oct. 10—Germans take Belgrade.
12—Edith Cavell executed.
13—Bulgaria joins Germany.
27—Germans and Bulgarians open way to Constantinople.
30—Germans defeated at Mitau.
Nov. 9—Italian liner Ancona torpedoed.
Dec. 1—British retreat near Bagdad.
4—Ford "peace party" sails for Europe.
8-9—Allies defeated in Macedonia.
15—Haig succeeds French.

1916

Jan. 8—British troops at Kut-el-Amara surrounded.
9—British abandon Dardanelles.
Feb. 22—Crown Prince attacks Verdun.
Mar. 8—Germany declares war on Portugal.
24—Steamer Sussex sunk.
April 18—President Wilson's note to Germany.
24—Insurrection in Dublin.
29—British surrender at Kut-el-Amara.
30—Irish revolution suppressed.
May 3—Irish leaders of insurrection executed.
4—Another German promise re submarines.
13—Great Austrian offensive against Italians.
31—German navy crushed off Jutland.
June 5—Lord Kitchener lost on Hampshire.
11—Russians capture Dubno.
29—Sir Roger Casement sentenced to be hanged for treason in connection with Irish insurrection.
July 1—Great allied offensive on Somme.
6—Lloyd George secretary of war.
23—Gen. Kuropatkin's army wins battle near Riga.
27—English take Delville Wood.
Aug. 2—French take Fleury.
3—Sir Roger Casement executed.
4—French recapture Thiaumont for fourth time; British repulse Turkish attack on Suez Canal.
7—Italians on Isonzo front capture Monte Sabotino and Monte San Michele.
8—Turks force Russian evacuation of Bitlis and Mush (Armenia).
9—Italians occupy Goeritz.
10—Austrians evacuate Stanislau.
19—German submarine sinks British light cruisers Nottingham and Falmouth.
24—French occupy Maurepas, north of the Somme; Russians recapture Mush.
27—Roumania joins the Allies.
29—Hindenburg made chief of staff.
30—Russian armies seize five passes into Hungary.
Sept. 3—Allies renew offensive north of Somme; Bulgaria and German troops invade Dobrudja in Roumania.
10—German-Bulgarian army captures Roumanian fortress of Silistria.
14—British introduce "tanks."
15—Italians begin new offensive.
Oct. 2—Roumanian army defeated.
8—Submarines sink ships off Nantucket, Mass.
24—French win two-mile drive near Verdun.
Nov. 1—Italians capture 5,000 Austrians.
2—Germans evacuate Fort Vaux, Verdun.
6—Submarine sinks British passenger steamer Arabia.
7—Cardinal Mercier protests deportation of Belgians. Submarine sinks American steamer Columbian.
8—Russian army invades Transylvania.
9—Austro-German armies defeat Russians in Volhynia.
13—British launch new Somme offensive.
19—Germans cross Transylvania Alps and enter Western Roumania.
25—Greece joins Allies.
28—Roumanian government abandons Bucharest.
Dec. 5—Premier Asquith of England resigns.
7—Lloyd George becomes premier.
8—Germans take big Roumanian army.
12—Chancellor Bethman-Hollweg announces that Germany will propose peace.
Gen. Nivelle made commander-in-chief of the French army.
15—French gain at Verdun and capture 11,000.
19—Lloyd George declines German peace.
26—Germany proposes peace to President Wilson.
27—Russians defeated in five-day battle in Eastern Wallachia, Roumania.

1917

Jan. 1—Submarine sinks British transport Ivernia.
31—Germany announces unrestricted submarine warfare.
Feb. 3—U. S. severs diplomatic relations with Germany. American steamer sunk without warning.
12—United States refuses German request to discuss differences unless Germany withdraws unrestricted submarine warfare order.
26—President Wilson asks authority to arm American merchantmen.
Mar. 11—British capture Bagdad.
17—French and British capture Bapaume.
21—American oil steamer Healdton torpedoed without warning.

Mar. 22—United States recognizes new government of Russia.
27—British defeated near Gaza.
April 6—U. S. declares state of war with Germany.
9—United States seizes fourteen Austrian interned ships.
British defeat Germans at Vimy Ridge and take 6,000 prisoners.
28—First draft act passed.
May 7—War Department orders raising of nine volunteer regiments of engineers to go to France.
14—Espionage Act becomes law by passing senate.
19—Congress passes war appropriation bill of $3,000,000,000.
June 5—Nearly 10,000,000 men registered.
12—King Constantine of Greece abdicates.
13—Gen. Pershing in Paris.
15—First Liberty Loan closes.
26—First American troops in France.
July 9—Food and fuel placed under federal control.
14—Aircraft appropriation bill of $640,000,000 passes house.
23—Premier Kerensky given unlimited powers in Russia.
28—United States War Industries Board created.
Aug. 25—Italians break through Austrian lines.
28—President rejects Pope's peace plea.
Sept. 16—Russia proclaims republic.
20—Gen. Haig advances mile at Ypres.
21—Bliss named chief of staff.
Oct. 25—French take 12,000 prisoners on Aisne.
27—Announcement that American troops had fired first shots in the war.
29—Italian Isonzo front collapses.
Nov. 9—Permanent inter-allied military commission created.
24—Navy Department announces capture of first submarine by American destroyer.
28—Bolsheviki in full control in Russia.
Dec. 6—Submarine sinks the Jacobs Jones, American war ship.
8—British take Jerusalem.

1918

Jan. 5—President announces fourteen peace points.
Feb. 2—U. S. troops take over first sector near Toul.
6—U. S. Troopship Tuscania sunk—126 lost.
Mar. 1—Americans repulse attack on Toul sector.
2—Bolsheviki make peace with Germany.
4—Roumania surrenders.
Mar. 21-24—Germans spring offensive gains fifteen miles. American engineers rushed to aid British.
28—British and French counter-attacks make gains.
April 4—Germans start second phase of spring drive.
23—Zeebrugge submarine base "bottled."
May 5—Austria starts drive on Italy.
10—Ostend submarine base "bottled."
27—Germans begin third phase of drive.
30—Germans again reach the Marne, fifty-five miles from Paris.
June 1—Germans forty-six miles from Paris.
3—Submarines attack U. S. coast and sink eleven ships.
5—U. S. marines fight near Chateau-Thierry.
9—Germans start fourth phase of their drive.
10—U. S. marines capture south end of Belleau Wood.
12—French and Americans start counter-attack.
15—Austrians begin another drive on Italy.
22—Italians defeat Austrians on the Piave.
23—Austrians begin great retreat.
July 18—Gen. Foch launches allied offensive.
21—Americans and French capture Chateau-Thierry.
30—Germans flee from Marne.
Aug. 2—Soissons recaptured by Foch.
Sept. 12—Americans attack St. Mihiel salient.
28—Allies win on 250 mile line.
29—Allies cross Hindenburg line.
30—Bulgaria surrenders.
Oct. 6—Germany asks armistice.
7—American Argonne victory.
8—President Wilson refuses armistice and (Oct. 14) demands unconditional surrender.
18—Czecho-Slovak declaration of independence.
30—Italians defeat Austrians.
31—Turkey surrenders.
Nov. 3—Austria surrenders to Italy.
9—Kaiser Wilhelm abdicates.
10—Revolution in Germany. Kaiser and Crown Prince flee to Holland.
11—Germany surrenders.
12—Emperor Charles of Austria abdicates.
16—Czecho-Slovak Republic proclaimed.
17—Hungarian republic proclaimed.
21—German high-seas fleet surrenders.
Dec. 4—President Wilson sails for Europe to attend peace conference.

1919

June 28—Peace treaty, including League of Nations, signed.

General Marshall, advanced his front on the Euphrates in the early months of 1918, and broke up the new Turkish concentration about two miles north of the town of Hit. On March 9, 1918, British Indian troops occupied Hit, and Turkish forces were pushed back to Salahiya, and to Aleppo.

Hitchcock, Edward, a distinguished American geologist, was born at Deerfield, Massachusetts, in 1793. After completing his education he became principal of an academy, and a short time later pastor of the Congregational Church at Conway, Massachusetts. While occupying this post he completed his popular work, *The Geology of the Connecticut Valley,* the success of which won him a chair of chemistry and natural history at Amherst College. Since early youth he had manifested a keen interest in chemistry and natural history. In 1845 he became president of that college and served in that capacity until 1854. At that time, when geological research was still in its infancy, Professor Hitchcock found an abundance of material with which to work. His fame spread among European scientists.

From 1830 to 1844 Professor Hitchcock served as state geologist of Massachusetts, and of Vermont from 1857 to 1861. Upon resigning from the presidency of Amherst College in 1854, he retained his chair of chemistry and natural history. A large part of his most valuable work was his study of the fossil footprints in the sandstones of the Connecticut Valley. After his death in 1864 his work was carried on by his son, Charles Henry, who became professor of geology at Dartmouth College, until his death in 1919.

Edward Hitchcock was one of the founders of the American Association of Geologists and Naturalists. He served as its first president in 1840. He was also one of the charter members of the National Academy of Sciences. Among his published works are: *Elementary Geology* (1840); *The Religion of Geology and Its Connected Sciences* (1851), and *Ichnology of New England* (1858-65).

Hitchcock, Ethan Allen, an American military officer and writer, was born at Vergennes, Vermont, in 1798. He was graduated from West Point and entered the army. In 1824 he was promoted to the rank of captain. For three years he was instructor in military tactics at West Point. He served for ten years on frontier duty, in Florida and in Mexico. He was made a colonel and later a brigadier-general for his services at Molino del Rey. In 1855 he resigned from the army. In 1862, however, he was appointed major-general of volunteers. He was a personal friend and a military adviser of Abraham Lincoln. His published writings include: *Remarks on Alchemy and the Alchemists* (1857); *Swedenborg, a Hermetic Philosopher* (1858); *The Sonnets of Shakespeare* (1865), and *Notes on the Vita Nuova of Dante* (1866). He died in 1870.

Hitchcock, Ethan Allen, an American political leader, diplomat, and Cabinet officer, was born in Mobile, Alabama, in 1835. He was educated at New Haven, Connecticut. He was in business in China and for several years at St. Louis, Missouri. In 1897 he was sent as United States Minister to Russia. When the legation was raised in rank, he became Ambassador. In 1898 he was appointed Secretary of the Interior, serving in that capacity until 1907. He was largely instrumental in uncovering the system of public land frauds which had prevailed in the West, and many of the participants were punished. He died in 1909.

Hitchcock, Frank Harris, an American statesman and publicist, was born at Amherst, Ohio, in 1867. He was graduated from Harvard University in 1891, and from George Washington University in 1894. He was admitted to the bar and practised law for a time. In 1905 he was appointed first assistant postmaster-general. In 1908 he was manager of William H. Taft's campaign for the Presidential nomination. He then became chairman of the Republican National Committee and had charge of the campaign resulting in Mr. Taft's election as President. He was appointed Postmaster-General (1900-13), and his conduct of the office resulted in a surplus of revenue over expenditures. During his term, the postal savings system and parcel post were introduced into the American postal system. Near the close of his administration he recommended government ownership of the telegraph lines. In 1913 he resumed the practice of law in New York City.

Hitchcock, George, a noted American artist, was born in Providence, Rhode Island in 1850. He was educated at Brown University and Harvard Law School. In 1874 he went to Paris where he studied art under Boulanger and Lefebvre. In 1885 his Tulip Growing won him great praise when exhibited in the Paris Salon. To-day his works are exhibited in the Chicago Art Institute, the Dresden Gallery, the Detroit Museum of Fine Arts, and in Vienna. Hitchcock died in 1913.

Hitchin (*hĭch'ĭn*), a market town of Hertfordshire, England, is situated about thirty-two miles northwest of London. Hitchin has been famous for centuries for its production of lavender which has been grown here since 1568. Since 1823 lavender has been grown for its commercial importance, the manufacture of lavender-water. The town was important in the days of King Alfred.

In 1931 the population was 14,382.

Hitler, Adolf, who became Chancellor of Germany in 1933, was born at Braunau, Austria, on April 20, 1889. His father was a small customs official on the Austro-German frontier, and wished him to obtain a similar position. With this end in view, young Hitler was sent to the *Realschule* at Linz. He opposed the plan from the first, refused to study, and failed in his examinations, declaring he was already a German nationalist at heart and did not wish to enter the service of the Austrian government. After leaving school, he went to Vienna and there worked as a carpenter and painter for five years.

ADOLF HITLER

In 1912 Hitler left Vienna and went to Munich to escape serving in the Austrian army. Two years later, upon the outbreak of the World War, he joined the German army. As a dispatch runner, he proved himself a loyal and courageous soldier. He held the rank of corporal. After the war, he returned to Munich. Hitler was not the founder of the party of which he became the leader; he became a member in May, 1919, when he attended a meeting in Munich out of curiosity. There he made a speech, and soon became the leading figure of the group, which was known as the National Socialist German Labor Party.

With the assistance of General Erich von Ludendorff, Hitler organized a revolt in Munich, which is referred to as the Hitler *putsch*. The outbreak occurred on November 8, 1923. The revolt was promptly put down. Ludendorff was arrested first; Hitler was taken on November 12. For his activities against the government, Hitler was sentenced to serve five years in prison. At this time he had about 20,000 followers. When he was released a year later by the generous government of the German Republic, he found his following greatly diminished, and immediately set about organizing a new party.

The National Socialists or *Nazis* adopted a semi-military uniform somewhat like that of the Fascisti in Italy, with the difference that the shirts are brown instead of black. The swastika was chosen as the emblem of the party. Of medium height, slender, with dark hair, a small close-clipped mustache, and eyes that indicated slightly the fire within him, Hitler kept adding to his followers. Slowly and surely his party gained strength. By 1930, there were 107 *Nazi* deputies in the Reichstag. Every effort was made by these deputies, under the direction of Herr Hitler, who at this time was not even a German citizen, to embarass the Government. On December 4, 1931, Hitler said: "I would be an idiot if I tried to secure power in Germany by illegal means. It will not be necessary for me to seize power through a *coup d'etat*. It will be mine within a short time, anyway, as every election brings my party closer to an absolute majority."

At this very time, Hitler was actually a man without a country. By enlisting in the German army in 1914, he lost his Austrian citizenship. Since then he had been refused naturalization by his adopted country. In February, 1932, he was appointed an attaché of the legation of the State of Brunswick at Berlin. Upon taking the oath of office he swore allegiance to the Republican Constitution of Germany and so became a citizen.

In the presidential election of the Spring of 1932, Hitler ran for election in opposition to President von Hindenburg. There were five candidates, and Hitler was von Hindenburg's most formidable opponent. The voting occurred on Sunday, March 13, and when the complete election returns were announced on the following day it was found that von Hindenburg had failed to obtain a majority over the combined votes of his four opponents. A second or "run-off" election was held on April 10. In this election von Hindenburg was an easy winner over Hitler, although the latter polled a substantial vote.

The next step in Hitler's rise to power was the election of the Reichstag on July 31, 1932. The *Nazi* party gained thirty-seven per cent of the seats, and the followers of Hitler demanded that as leader of the largest party, he be appointed Chancellor of Germany. President von Hindenburg was loath to do this. Another Reichstag election was held on November 6, at which the Hitler party suffered a temporary setback, polling about 2,000,000 less votes than it did in the election of July 31, and losing some thirty-five seats in the Reichstag. With 195 deputies, however, the *Nazis* were still the largest party. It was not until the resignation of Chancellor Curt von Schleicher on January 28, 1933, that President von Hindenburg finally called in Hitler and appointed him to form a Cabinet. The advent of Hitler to authority was followed by a Reichstag election on March 5, 1933, in which his party was victorious.

In the more than fourteen years since the signing of the Armistice, the majority of

English-speaking people had come to believe that many of the stories circulated about German atrocities in the World War were largely propaganda. No sooner had the *Nazis* come into power in Germany, however, than there was astonishing evidence of German brutality. The treatment accorded the Jews and the opponents of the Hitler régime amazed the civilized world. Day after day and week after week the press carried stories of kidnapings, beatings, and assassinations never equalled in modern times.

The oppression of the Jews, however, was only a part of the Hitler program. He immediately set about consolidating the *Nazi* position. By the time his forty-fourth birthday anniversary arrived, on April 20, 1933, he was hailed by President von Hindenburg as a comrade and showered with words of gratitude and good wishes by the nation. The celebration of the anniversary of his birth was the first instance of this character since the days of Bismarck.

The next step of Hitler was to adopt a foreign policy which amounted to open refusal to follow the provisions of the Versailles Treaty. In the autumn of the year, Germany withdrew from the League of Nations. In July, 1934, occurred the "Bloody Saturday and Sunday," the first major insurrection Chancellor Hitler had found it necessary to cope with among his troops. Unrest prevailed throughout Germany on August 2, 1934, when President von Hindenburg died at his home in Neudeck, East Prussia. Chancellor Hitler immediately assumed the duties, although he refrained from using the title, of that office. Just what the result of the new nationalism which Hitler has aroused in Germany will be is an enigma.

Hives, a name popularly given to an eruption of the skin known as urticaria or nettle rash. The eruption is caused by some disturbance of the digestive tract and is accompanied by severe itching. The disease appears as white, rounded elevations or long wheals, which turn red later, especially after scratching or rubbing. The treatment for hives is of course directed toward the digestive organs. Alkalies and salicylates, taken internally, are helpful. After administering an aperient, local applications of dilute acids or bichloride of mercury will give relief from the itching and burning sensation.

Hoang-Ho (*hwäng'hō*), **Hwang-Ho** or **Hwang,** Yellow River, the second longest river in China, is 2,600 miles in length. It rises in the plain of Odontala, south of the Kuen-Lun Mountains. After following a winding course, it discharges its waters in the Gulf of Pe-chi-li. It is said to have changed its course no less than nine times in the last 2,500 years. In 1933 it was out of its banks and was threatening to return to its old bed which it left in 1852, and find its outlet to the sea by way of Suchow and the channel of the Hwai River, hundreds of miles to the south. The flood level of the Hoang-Ho is fifteen to twenty feet above the level of the plains below the city of Tungahsien. Inundations are the cause of ceaseless expense and much privation and suffering.

Hoar, Ebenezer Rockwood, a Republican politician and eminent jurist of the United States, was born at Concord, Massachusetts, in 1816. He was graduated from Harvard Law School in 1839, and admitted to the bar in 1840. He was attorney-general of the United States in 1869-70 and a member of Congress during 1873-75. He sat upon the commission which in 1871 framed the treaty of Washington. It was he who raised the attorney-general's department to the rank of the modern department of justice. He died in 1895.

Hoar, George Frisbie, an American lawyer and statesman, was born at Concord, Massachusetts, on August 29, 1826. He was educated at Harvard University and was admitted to the bar in 1849. In 1869 he was elected a representative in Congress from Massachusetts, and to each subsequent Congress until 1877, when he was elected to the United States senate, to which he was re-elected in 1883, 1889, 1895 and 1901. He was presiding officer of the national Republican convention of 1880. He was responsible for the Presidential Succession Act of 1886. His long career was marked by broad patriotism and conspicuous ability in the discussion and solution of important public questions. He died on September 30, 1904.

Hobart (*hō'bȧrt*) **Garret Augustus,** an American lawyer, was born at Long Branch, New Jersey, in 1844. He was graduated from Rutgers College, and studied law, beginning the practice of his profession in 1866 at Paterson, New Jersey, where he permanently resided. In addition to his profession, he engaged in enterprises of a commercial nature, as water-companies, manufactures and railways. He was a Republican in politics, and served in the legislature of New Jersey, both as speaker of the house and as president of the senate. In 1896 he was elected vice-president of the United States on the Republican ticket with Mr. McKinley. He died while vice-president, at Paterson, New Jersey, on November 21, 1899.

Hobbema (*hŏb'ĕ-mä*) **Meindert,** a Dutch landscape-painter, was born in 1638, probably at Amsterdam, and became one of the foremost landscape-painters. He died in poverty, at Amsterdam, in December, 1709. One hundred and forty-two of his works have been catalogued, and they command high prices, a small landscape selling for $20,000. The *Avenue Middleharnis, Holland,* in the National Gallery at London, is a fine example of his work.

Hoboken (*hō'bō-kĕn*), a city of Hudson County, New Jersey, named after a village near Antwerp, Holland. It joins Jersey City on the north and is opposite New York city. Four lines of steamships start from here. Its principal manufactures are iron castings, chemicals, wall-paper, leather, silk, caskets and leadpencils. It also has brickyards and carries on shipbuilding and repairing. The Stevens Institute of Technology, located here, is one of the best in the United States. Hoboken has excellent public and parish schools, an academy (the Sacred Heart), many fine churches, hospitals etc. It has ferry connection with New York, and electric lines run between Hoboken and several cities and towns of New Jersey. The city has the service of three railroads. Population 70,324.

Hob'son's Choice is a phrase which owes its origin to a man named Tobias Hobson, who was the first person in England who kept a livery-stable. He owned 40 horses, and politely offered his customers their choice, but always managed to give the traveler the horse nearest the door. Hobson's choice thus means an apparent choice only. The story is told in *The Spectator*.

Hochkirch (*hōch'kirch*), a village in Saxony, memorable on account of a battle between the Germans under Frederick II and the Austrians under Marshal Daun, on Oct. 14, 1758, during the Seven Years' War. Frederick lost 9,000 men and 101 cannon, and the Austrians lost 6,000 men.

Hog. See SWINE.

Ho'garth, William, a celebrated painter, engraver and pictorial satirist, was born at London on Nov. 10, 1697; served an apprenticeship to a silversmith; and studied art at Sir James Thornhill's school in James Street. About 1720 he set up for himself, first being employed in engraving coats of arms, crests etc. and in designing plates for booksellers. He made the illustrations for Gray's edition of Butler's *Hudibras*. He secretly married the daughter of Sir James Thornhill in 1729, and in 1730 began the painting of his satires, among them being *Harlot's Progress*, *A Midnight Modern Conversation*, *A Rake's Progress*, *The Distressed Poet* and his masterpiece, the famous *Marriage à la Mode*. He died at London on Oct. 26, 1764.

Hohenlinden (*hō-en-lĭn'den*), a small village in upper Bavaria, famous on account of the battle between the French and Austrians on Dec. 3, 1800. The Austrians lost 17,000 men and 74 guns, and the French loss was 5,000 men.

Hoh'enlo'he, Prince Clodwig Karl Victor, German chancellor and prime minister of Prussia, was born on March 31, 1819, was educated at Göttingen, and in 1845 became a member of the Bavarian parliament. After serving as ambassador of the kingdom at the papal, Italian and Greek courts, he entered the house of peers in 1870, and after the close of the Franco-German War he was a member of the first imperial parliament. Three years later he was made ambassador to France, and was a member of the congress of Berlin in 1878. He entered the reichstag the same year. In 1885 he was made governor of Alsace-Lorraine, retaining that post until 1894, when he was made chancellor of the German empire and Prussian prime minister. He resigned in October, 1900, and died in 1901.

Hohenzollern (*hō' ĕn-tsôl-lĕrn*) **House of,** formerly the royal family of Germany, was founded by Count Thassilo in the beginning of the 9th century, and continued to rule over Brandenburg, furnishing the kings of Prussia after 1701 and the emperors of Germany from 1871 to 1918, when William II abdicated the throne. Hohenzollern is a province of Prussia, encircled by Baden and Wurttemberg; area 441 square miles and population 68,282.

Holbein (*hōl'bīn*), **Hans,** the younger, one of the most celebrated of painters, was born at Augsburg, Germany, in 1497; and died in 1543. His father, Hans Holbein the elder, also was a well-known painter. The best of his early works was the altarpiece for the monastery of St. Catherine, painted in 1515-16. About this time Holbein went to Basel, and four years later made it his home. In 1522 was painted his *Madonna and Child*, one of the best of this master's pictures. In 1526 or 1527 he visited England, met Sir Thomas More, and began his great series of portraits of the leading Englishmen of the day. Among the most notable of these are *Archbishop Warham* and *The Family of Sir Thomas More*. Three years later he was again in Basel, painting on the walls of the council-hall *Rehoboam*, *Samuel and Saul* and *Hezekiah*. In 1532 he again visted London, and among his pictures of this period is the famous group, *The Ambassadors*. He became royal painter to Henry VIII, and painted portraits of the king, Jane Seymour and others of the court. Holbein is at his highest in his portraits. Here his power of expression, truth and richness of color rank him with the greatest masters. See R. N. Wornum's *Life and Works of Holbein*.

Hol'land, The Netherlands, is a kingdom lying west of Prussia and on the southern shores of the North Sea. Its dimensions are 195 miles long and 110 miles broad, covering an area of 12,648 square miles. It is divided into eleven provinces, with a total population of 7,300,000, which makes it a very densely settled country. The land is covered with a network of canals, used for irrigation and transportation; yet, the land being in the main much below the level of these artificial streams and of the sea, all are bordered by high dikes or embankments, serving the double purpose of preventing overflows and, being broad and smooth on the top, of carriage-roads and footpaths. During the winter months these canals, being icebound, are used by skaters. Large windmills are used to pump out any extra water, and these mills, with their great sails, are seen everywhere in Holland. In climate it is much like England.

Possessions. Holland has an area of 783,000 square miles in her colonies, with a population nearly 50,000,000. The East Indian possessions include Java, Sumatra and parts of Borneo and New Guinea; and the West Indies, Surinam, Curaçoa and Dutch Guiana.

Natural Resources. Some coal is mined, and the fisheries trade is very large. Nearly five thousand vessels and twenty thousand seamen are thus engaged, and the herring and oyster yield is of great value.

Agriculture. While there is a scarcity of farmland, the Hollander is a skillful and thrifty farmer, and the agricultural output consequently is very large. Rye, oats, potatoes, wheat, barley, beans, beet-root, buckwheat, peas, rapeseed, carrot-like plants for forage and tobacco are produced. Poultry, cattle-raising and dairy-farming are the chief industries of the Dutch farmer, and the cheese and butter output is enormous. Much attention is given to bee-culture and to the raising of flowers, bulbs and flower-seeds.

Manufactures. The chief manufactures are linen, cotton, woolen and silk fabrics; paper, leather, glass etc.; and lately refining beetsugar has formed an important item. There are 28 beetsugar refineries, 13 sugar refineries, 88 vinegar manufactories, 37 saltworks, 536 distilleries and 471 breweries. Amsterdam has had the largest diamond-cutting trade in the world.

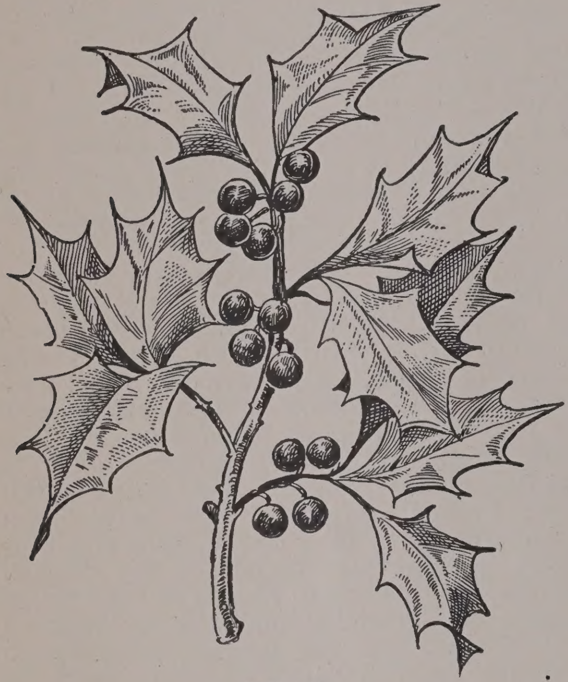
Transportation and Foreign Trade. The total length of the canals is over 2,000 miles, and there are several thousand miles of railways connecting many towns and cities. Since the colonies of Holland are over 60 times as large as Holland herself, and since they contain 7 times the population of the mother country, we may understand why the Netherlands is one of the World's greatest shipping countries. And as most of her colonies lie in or near the tropics, the future trade will be even greater when all the torrid areas shall be fully utilized.

Zuyder Zee. Holland began in 1925 to dam and drain the Zuyder Zee, the great body of water which makes swamp land of the heart of the country. In prehistoric times it was larger than at present, but in the eighth century much of it was dry and under cultivation. When the dam is completed, 1,350 square miles will be reclaimed. See *Zuyder Zee*, page 2138.

History. What now is Holland was occupied by the Frisians about 150 .B C. They were afterward subdued by Drusus, and Holland south of the Rhine remained under the Roman empire until the 4th century, when it succumbed to the Franks. In the 8th century it submitted to Charlemagne, when the duchy of Flanders was shortly afterward founded. Charles V of Spain, coming into power over the Netherlands, made the country one of great importance, but under his son, Philip II, the Dutch began a revolt, which lasted for eighty years before the Spanish yoke was finally thrown off, their deliverer being William of Orange, known as William the Silent. Until 1713 Holland was a power in Europe, but in that year its decline began, until now it is but a small nation, without voice in matters of diplomatic weight, living on its former glory and greatness. Holland in the 16th century was one of the great powers in Europe. Her ships were met with everywhere, and carried most of the world's trade. Amsterdam was the Venice of the north, and was early a banking exchange for Europe. The first optical instruments and the pendulum clock came from Holland. The art of printing was here carried to a high degree, and the liberty of the press led to the establishment of many newspapers, some of which were printed in French and sent all over the world. Her power was crippled by England in the great naval war of 1652–54 and by France, under Condé and Turenne, in the reign of Louis XIV. When William III became king of England, he protected Holland from France and secured the treaty of peace. The 18th century, however, was the century of Holland's decay. In 1794 the armies of France overran Belgium, and the United Provinces became the Batavian Republic, paying a large amount for a French army. In 1806 Louis Bonaparte was made king of Holland, and four years later it was added to the French empire. On the fall of Napoleon the Orange family were recalled and the kingdom of the Netherlands was formed, from which Belgium seceded in 1830. The capital is The Hague, and the queen is Wilhelmina, the daughter of William III of Holland. She was born in 1880, and is one of the youngest sovereigns in Europe. The regent during her minority was her mother, Queen Emma, who was assisted by a council of guardians. Wilhelmina in 1901 married Prince Henry of Mecklenburg-Schwerin. The chief towns are Amsterdam (670,000), Rotterdam (530,000), The Hague (370,000) and Utrecht (155,000). The Netherlands is a free-trade country. See *Rise of the Dutch Republic* by Motley; *Picturesque Holland* by Havard; and *Philip II of Spain* by Prescott.

Holland, Josiah Gilbert, an American writer, was born at Belchertown, Mass., July 24, 1819. He studied medicine and practiced for some three years, and then became superintendent of public schools at Vicksburg, Miss. He was connected with the *Springfield Republican* from 1849 until 1866. He was one of the founders of *Scribner's Magazine* in 1870, and remained editor of it and of *The Century Magazine* until his death. He was a prolific author, and all his books were of a high moral tone. Some of the best known are *Bitter-Sweet; Gold Foil; Arthur Bonnicastle; The Story of Sevenoaks;* and *Nicholas Minturn.* He died at New York, Oct. 12, 1881.

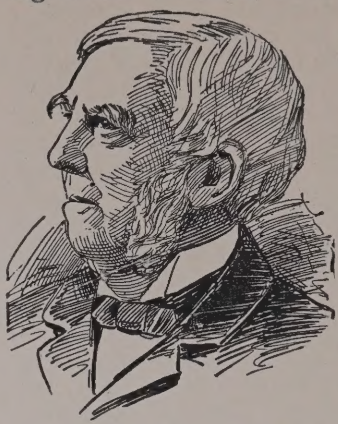
Hol'ly, species of the genus *Ilex,* which contains about 175 species distributed throughout the world. They are ornamental shrubs with evergreen or deciduous and sometimes spiny leaves and black, red or yellow berries, which remain on the shrubs until the following spring. In this country holly is most abundant on the bottom-lands of the streams of eastern Texas and southern Arkansas, but occurs on the Atlantic coast from Massachusetts to Florida; and in the valley of the Mississippi it is found from southern Indiana to the Gulf, in Mississippi and in Louisiana. The hollies with scarlet or red berries are regarded as the most ornamental, and the branches of *I. opaca* and *I. aquifolium* bearing red berries are in large demand for Christmas decoration. *I. opaca,* known as the American holly, is a tree sometimes 50 feet high. *I. aquifolium* is a favorite evergreen shrub in English gardens, and there are numerous varieties of it in cultivation, known as the European holly. It is native to Europe and Asia.



HOLLY

Hol'lyhock, an old garden-plant (*Althæa rosea*) belonging to the mallow family. Numerous varieties of it have been developed, and it is one of the treasured "old-fashioned flowers." It comes originally from Syria. The double variety is taking the place formerly held by the single one and shows a wide range of color.

Holmes, Oliver Wendell. With our reading-tables crowded with periodicals of rich and varied contents and of wide circulation, it is difficult to realize that the launching of a literary magazine in the United States, fifty years ago, was looked upon as a hazardous undertaking. Public taste and confidence would have to be cultivated, and contributions, it was feared, imported. Where was *The Atlantic Monthly* to look for writers? Of poets we had a goodly number, and Lowell was to edit the magazine. But of prose-writers, Hawthorne was abroad in the consular service and was writing very little, and Washington Irving was within two years of his death. A number of younger writers had still to win their spurs. In this emergency Lowell appealed to Dr. Holmes, a Boston physician and medical lecturer at Harvard.



OLIVER W. HOLMES

Born in Cambridge, Mass., Aug. 29, 1809, Oliver Wendell Holmes was forty-eight years old. When in college more than a quarter of a century before, he had won fame over-night by writing *Old Ironsides,* a poem that got into the school-readers and saved the *Constitution* from destruction. He still wrote verse occasionally, and he had local celebrity as a conversationalist. His drawing-room talk and class-room lectures were said to be good enough to print. Lowell declared boldly: "The success of this magazine rests with Dr. Holmes. He has written little, but you'll see. His mind is like a bright mountain stream that has been dammed up in the hills, waiting only an outlet to the ocean. He has a wonderful store of thought — serious, comic, pathetic and poetic." The prediction was verified in that delightful series of essays, *The Autocrat of the Breakfast Table.* Nothing so wise, so witty, so humorous, so kindly, so philosophical, had been produced in America. English critics declared he had the flavor of Montaigne, the sweetness of Goldsmith, the high-bred fancy of Leigh Hunt and a moral freshness all his own — a boy-heart, unsullied, in a manly breast, beating true under a poet's robe.

The place he thus gained in the world of letters he continued to hold unchallenged to the day of his death, in October, 1894, at the age of eighty-five. *The Professor at the Breakfast Table* soon followed; then *Elsie Venner The Guardian Angel, The*

Poet at the Breakfast Table, A Mortal Antipathy and *Over the Teacups*. In the breakfast-table series were included poems that have taken their place among American classics: *Dorothy Q, The Last Leaf, The Voiceless* and *The One-Hoss Shay. The Chambered Nautilus* ranks among the highest productions in English verse. Dr. Holmes' achievements in literature are all the more remarkable for the fact that writing was never his main business in life. Until he was seventy-three he continued to fill his professorship at Harvard. He took care of a large private practice, wrote medical treatises, and made many original scientific investigations. Essays, novels, poems were simply the by-product of a richly stored mind and heart. A merry, restless little fellow of varied interests and tireless energy in boyhood, he never outgrew a certain youthfulness in appearance and in his outlook on life. In old age his interests ranged all the way from song to science, from theology to the college boat-races. If wise and witty, he also was warm and kind. If he pricked the bubble of the folly and conceit of society, he always dressed the wound with the ointment of tenderness and tolerance. While there is delight for the most fastidious in Holmes' writings, there never is any straining after effect in his flights of fancy, any assumption of superiority in his wisdom, any taint of cynicism in his humanity to chill or discourage the humblest. He must be a vain and empty man, indeed, who finds no food for thought or good cheer for the affections in our genial autocrat.

Holmes, Oliver Wendell, Jr., American jurist, son of Oliver Wendell Holmes, was born in Boston in 1841. He was educated at Harvard, graduating in 1861. He served in the Civil War, and was three times wounded. He afterwards studied law, won a practice in Boston, and from 1870 to 1873 was editor of the *American Law Review*. In 1882 he became professor of law at Harvard and in 1889 chief justice of the Massachusetts supreme court. In this position he was made quite famous among lawyers by his original decisions. In 1902 he became a Supreme Court judge of the United States. He is the author of *The Common Law* and several other legal works.

Holst, Hermann Eduard von, a Russian-German historian and teacher, was born at Fellin, Livonia, June 19, 1841. He was educated at Dorpat and Heidelberg. He came to the United States, engaging in journalistic and literary work in New York city. He was made professor of history at Strassburg University in 1872, and in 1874 was made professor of modern history at Freiburg. While holding this chair he revisited the United States and was a lecturer at Johns Hopkins University, and in 1892 was called from Freiburg to the chair of history at the University of Chicago. His principal work has been translated by J. J. Taylor and T. B. Mason under the title of *The Constitutional and Political History of the United States.* He was the author also of a *Life of John C. Calhoun* and *The Constitutional Law of the U. S. of America.* He died on Jan. 20, 1904.

Ho'ly Alli'ance, an international league formed at the instigation of Alexander I of Russia in 1815 and signed also by Francis of Austria and Frederick William III of Prussia. It nominally was for the purpose of binding together the Christian powers, and preserving them from the effects of any insurrections against the existing authority which the disturbing influence of Napoleon I had tended to encourage. Naples, France, Spain and Sardinia joined the alliance at a later date. In its name the rebellions in Piedmont and in Naples were crushed in 1823. By 1848 it had become a dead letter.

Ho'ly Ro'man Em'pire. See GERMAN EMPIRE.

Holyoke (*hōl'yōk*), **Mass.,** a busy, industrial city in Hampden County, on the Connecticut River, eight miles north of Springfield, in the western-central part of the state. Its 500 manufacturing establishments derive their chief water-power from an immense dam in the river, which is here bridged, connecting Holyoke with South Hadley Falls. Of its many industries, one of the chief is the manufacture of fine writing-papers, blank-books and stationery; there are, besides, many cotton and woolen, silk, thread, alpaca and knitgoods mills. School-supplies are manufactured as well as automobiles, bicycles and furniture. Belting, screw, wire, cutlery and machine shops give collective employment to many thousand artisans. Holyoke has a substantial city hall, a library, one of the finest hotels in New England, a vocational school, two fully equipped hospitals and two orphanages just outside the city. It has excellent public, parish and evening schools and a college of music. Holyoke has fine waterworks, electric street railroads and the other useful adjuncts of a progressive city. Population 60,000.

Holyoke, Mt., a steep ridge of greenstone trap, well-timbered, about seven miles long, in Massachusetts. It is near the towns of Hadley, South Hadley and Amherst. The western end of the ridge is called Mt. Holyoke and the eastern Mt. Tom, the two being separated by the Connecticut. The highest point rises 1,120 feet. At the summit is an hotel where travelers may rest who have made the ascent. Near by, at South Hadley, is Mt. Holyoke College, founded in 1837, for the education of women. It has 85 female instructors and 718 students, and possesses a library, with 32,000 volumes, and considerable scientific apparatus.

Homeo'pathy, a system of medicine or medical treatment, originally based upon the theory that the curative properties of drugs and medicinal agents are represented and illustrated by their effect upon a healthy person. The theory of homeopathy was first propounded by Dr. Samuel Hahneman about the end of the 18th century in Germany, and, though for some years it had few adherents, it has in later times gained a large following and a recognized place among reputable and scientific medical schools. The essentials in which homeopathy differs in practice from allopathy may be briefly stated. It condemns the commixture of several drugs in one prescription. When two or more medicines are required, they are given alternately, with a considerable interval between. It has always avoided as unnecessary and injurious the "heroic" treatments: blistering, blood-letting, severe purgatives, salivation by mercury etc. Particular attention is paid to diet, exercise, habits and other hygienic helps to recovery. It believes that doses given may be smaller than the old-fashioned practice made them. The first American homeopathic physician was Dr. Hans B. Gram, by parentage a Dane, who in 1825 practiced in New York city.

Homer, the greatest name in Epic poetry, of whom personally, however, we know little. But traditions agree in making Homer an Asiatic Greek, probably born at Smyrna about 850 B. C. He is represented as blind, and as reciting his unwritten poems from place to place. Some students believe the poems to be the compilation of a Homeric guild, who composed, collected and handed down (but not in writing) these legends of early history. The *Iliad* and *Odyssey* are sometimes referred also to different writers and sometimes to early and later periods of Homer's genius. They are the greatest epics of any age; the *Iliad* is called the "beginning of literature." Tennyson called Homer "the Ionian father of the rest." The Trojan war is the event celebrated, and the story, if not strictly historical, is based on the real life of the people. The poems of Homer have been translated into all the languages of Europe, among the best English translations being those of Pope, Bryant, Butcher, Lang, and Palmer.

See *Studies on Homer* by Gladstone, and *Lectures of the Translation of Homer*, by Matthew Arnold.

Homer, Mrs. Louise Dilworth Beatty, American singer, born at Pittsburg, Pa.; studied at Philadelphia and Paris. Made her debut as an opera singer at Paris in 1898; and her American debut at the Metropolitan Opera House, New York City, 1900. Her greatest successes have been in contralto roles, as Amneris in *Aïda*, Laura in *La Gioconda*, Azucena in *Il Trovatore*, Ortrud in *Lohengrin*, and Fides in *Le Prophète*.

Homer, Winslow, an American artist, was born at Boston, Feb. 24, 1838. He obtained notice by two pictures entitled *Home, Sweet Home* and *The Last Goose at Yuletown.* He pursued his studies in Paris, and won recognition as an artist of originality. Among his pictures are *Prisoners from the Front; Eating Watermelon; Flowers for the Teacher;* and three marine paintings: *Northeaster; Stormbeaten;* and *Wood's Island by Moonlight.* The last gained the medal of honor at the exhibition of the Academy of Fine Arts at Philadelphia in 1896. His other successful work includes among genre subjects *Cotton Pickers*, *A Visit from the Old Mistress* and, in marines, *The Life Line*, *Launching the Boat* and *The Maine Coast*, the latter a remarkably fine production.

Home'stead Laws refer, in the United States, not to homes in general, but to family residences which are held under certain definite statutes and obligations. The purpose of these restrictions is to preserve the home as far as possible from falling entirely into the hands of creditors. The homestead laws, which are passed not by the state legislature but by the federal government, are directed rather towards encouraging the closer settlement of rural districts by means of grants of the public land made upon easy terms. The first federal act of this kind was passed in 1862; and since this time some 90,000,000 acres of the public lands have been divided for homesteads. Heads of families, or American citizens over 21 years of age, may be granted as much as 160 acres of public land on condition that the holder should agree to live upon it for five years, make certain improvements, and pay certain small registration fees. It seems to be historically true that the stoutest backbone which a nation can have consists of a large body of small landholders.

Although almost all the states have laws to exempt portions of the homestead property from being seized by creditors, it is not intended that these exceptions shall overthrow the rights of creditors according to the common law. The courts have a good deal of freedom, being allowed to decide according to the spirit and purpose of the homestead laws and the common law. The amount of property which may be exempted commonly varies from 80 to 160 acres of land, and from $1,000 to $2,000 worth of improvements and personal property.

Homestead, Pa., a manufacturing borough in Allegheny County, on the Monongahela River, seven miles southeast of Pittsburg and on the Pennsylvania and Pittsburg and Lake Erie railroads. It is the focus of extensive iron, steel, glass and firebrick works and foundry products, its chief establishment being the mammoth steel-manufacturing plant of the U. S. Steel Corporation. Here, in the summer of 1892, there was a menacing industrial outbreak which necessitated the calling out of the National Guard of the state to suppress it. Population 25,000

Home, Sweet Home. The words of this favorite song were written by John Howard Paine. The melody to which they are set may be of Sicilian origin. It is commonly ascribed to Sir Henry Rowley Bishop (1786-1855) in whose opera of *Clari or the Maid of Milan* it occurs.

Homos'pory (in plants), a term which implies that the asexual spores produced by a plant are similar. All plants except spermatophytes (seed plants) and some pteridophytes (fern plants) are homosporous. Isospory is a synonym, and heterospory is the contrasting term, which see.

Hondu'ras, the third largest republic of Central America, lies between Nicaragua, San Salvador and Guatemala, having a coast line of 400 miles on the Caribbean Sea and about 50 miles on the Bay of Fonseca, an arm of the Pacific. Its area is about 46,250 square miles, and the population 553,446. Little or no attention is paid to agriculture, its chief wealth being in mineral products, as gold, silver, iron, copper, platinum, zinc, tin and lignite. The republic has 13 states or departments, is governed by a president assisted by six ministers, and the laws are made by a congress of 37 deputies. It was discovered by Columbus in 1502, and threw off the Spanish yoke in 1821. There is a railroad from Puerto Cortez to San Pedro Sula, thence to La Pimienta, 60 miles. See *Honduras* by Squier and *The New Honduras* by Lombard. The capital is Tegucigalpa (population 34,692); the other chief towns are Juticalpa (population 17,808), Nacaome (12,040), La Esperanza (11,453) and Santa Rosa (10,888). The main ports are Amalpa on the Pacific and Puerto Cortez, Omoa and Trujillo (Truscillo) on the Caribbean. The exports embrace mineral ores, including gold and bar silver, together with rubber and coffee. Exportation and importation are carried on chiefly with the United States.

Honduras, British, a crown-colony of Britain on the Caribbean Sea, south of Yucatan and 660 miles from Jamaica. Its area is 7,562 square miles; with a population of about 40,372, chiefly colored. Its chief exports are mahogany, logwood, sugar, coffee, plantains, bananas and cocoanuts. Principal town, Beliza (population 9,113).

Honey (*hŭn'y*), a very sweet, thick liquid made by bees and some other insects. The bees gather the nectar or sweet juice from flowers and carry it to the hive, where it is changed into honey and the cells of the honeycomb filled with it. Different flowers give different flavors and color to the honey. Clover honey is white, while heather honey or buckwheat honey is dark. The honey of Hymettus, a mountain in Attica, was held in high esteem, probably because of the flavor of wild thyme, which grew there abundantly. Honey is used as food, in the preparation of medicines and in the manufacture of some kinds of ale. It is sold in the comb and also as "strained honey." In this form it is sometimes adulterated with glucose. It is not unhealthy but is less sweet than pure honey. The annual production of honey in the United States is more than 60,000,000 pounds.

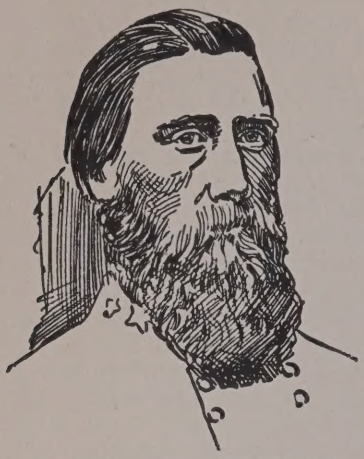
Hon'eysuck'le, species of the genus *Lonicera*, which contains nearly 150 species distributed throughout the northern hemisphere, more than 60 of which, in addition to numerous hybrids, are in cultivation. About 25 species are native to North America. The honeysuckles either are dwarf or climbing shrubs, always with opposite and entire leaves and tubular flowers, which are white, yellow, pink or scarlet and often fragrant. One of the most common climbers is *L. sempervirens*, the trumpet honeysuckle, with scarlet or rarely yellow flowers.

Hong'-Kong' or **Hong-Kiang** ("sweet waters"), an island belonging to Great Britain, the center of British commerce with China and Japan and an important naval and military station of that power, is on the east side of Canton River in the south of China. It has an area of 29 square miles, and, for the most part, is rocky and barren. Its beautiful harbor, one of the finest in the world, ten miles square, makes it the principal commercial station of eastern Asia, the aggregate value of exports and imports exceeding $200,000,000 per year. Its imports, which are chiefly from Great Britain, consist mainly of cottons and cotton-yarn, woolens, iron, coal, copper and machinery. Its exports are tea, silk, drugs and hemp. Hong-Kong formerly was part of China, and was first ceded to Great Britain in 1841. The population in 1925 was 650,000. Britain has now secured some territory inland (Kowloon), an area of 376 square miles, the population of which is here included. This is diplomatically known as the Kaulung Hinterland. The capital is Victoria.

Honolulu (*hō'nō-lōō'lōō*), the capital (population 90,000 of the Hawaiian or Sandwich Islands, which in 1898 were annexed to the United States and attached for military purposes to the department of California. This city is situated close to the southwestern coast of Oahu (See HAWAII). The islands were, on June 14, 1900, constituted as the territory of Hawaii, after an act had been passed declaring the inhabitants to be citizens of the United States and of the Territory of Hawaii. Honolulu has electric street railways and is lighted with electricity. There are railways on the island, and there is cable communication with San Francisco, the

line having been opened on Jan. 1, 1903. Nearly every family in Honululu, it is said, has its telephone—so amply equipped is the city.

Hood, John Bell, an American soldier, was born at Owingsville, Ky., June 1, 1831. He graduated from West Point in 1853, and served in the United States army in Texas and elsewhere on the frontier. When the Civil War began, he resigned and entered the Confederate service, in which he rose to the rank of lieutenant-general He was wounded at Gaines' Mill, Gettysburg and Chickamauga, where he lost a leg. He commanded a corps under Gen. Joseph E. Johnston in the Atlanta campaign, 1864, and succeeded Johnston in command of that army. Compelled to evacuate Atlanta after desperate fighting, he moved on Sherman's communications, fought a losing battle at Franklin, Tenn., but pushed on to Nashville, where he was disastrously defeated by Gen. Geo. H. Thomas on Dec. 16, 1864. At his own request he was then relieved of his command. His book, *Advance and Retreat*, was printed after his death, which occurred at New Orleans on Aug. 30, 1879.


GENERAL JOHN B. HOOD

Hood, Robin, an English bandit, celebrated in song and poetry. He is spoken of by almost every English poet. He is supposed to have been the last of the Saxons and to have lived about the close of the middle ages. He was brave, good-hearted and generous; his arrow never missed fire; and what he took from the rich he gave to the poor.

Hood, Thomas, an English poet, was born at London, May 23, 1798. His autobiography, *Literary Reminiscences*, tells us that until 13 years of age he was educated by two maiden ladies, and afterward all he knew he acquired without tutors. Showing some literary genius, he was made assistant-editor of the *London Magazine*, and this association developed his talents. His first poems attracted no attention, and it was not until the appearance of *Eugene Aram* that full recognition was accorded him. His writings were exceedingly numerous, and he turned his remarkable power of punning to many new uses. Some of his lyrics, as *The Song of the Shirt*, the *Bridge of Sighs* and the *Ode to Melancholy* will never die. He died at London on May 3, 1845.

Hook'er, Joseph, American general, born Nov. 13, 1814, at Hadley, Mass., and graduated from West Point in 1837. In the Mexican War he reached the rank of captain. He left the army in 1853, but in 1861 again offered his services. His bravery in the battles of the Peninsula won him the title of Fighting Joe. He took part at South Mountain, Antietam, Manassas, Fredericksburg and Chancellorsville; carried Lookout Mountain; and was with Sherman in his invasion of Georgia. He had command of the Army of the Potomac in 1863, but was superseded by Meade shortly after his defeat at Chancellorsville. In March, 1868, he retired with the rank of major-general in the regular army, and died Oct. 31, 1879.

Hooker, Thomas, a clergyman, was born in Leicestershire, England. He studied at Cambridge University, and in 1633 came to America. He became one of the two most famous of New England ministers, the other being John Cotton, who came to America on the same ship with Hooker. In 1636, Hooker with one hundred others founded the settlement at what is now Hartford, Connecticut. He died in 1647.

Hooke's Law describes an important phenomenon of elasticity, namely, that when a rod or wire of any material is stretched by a force, *the elongation of the wire varies directly as the force.* This law, which was discovered by Robert Hooke in 1675, holds only for those cases in which the forces are not so great as to exceed the limits of elasticity of the material. Hooke's law is now employed in a still more general sense to mean that the ratio of *stress* to *strain* is, within limits, a constant for all kinds of strains.

See ELASTICITY.

Hookworm, an intestinal parasite common in the South. In the larval stage it enters the body through a hair follicle, causing an irritation called "ground itch." The adult hookworm attaches itself to the wall of the intestine, sucking the blood and injecting a poison. Anemia is the most striking symptom of hookworm disease and yields readily to treatment. Lack of sanitary provisions and going barefoot multiply the hookworm.

Hoosac Tunnel, of the Fitchburg Railroad built through Hoosac Mountain, in western Massachusetts, is five miles long and one of the most notable tunnels in the United States. It was begun in 1851, twice abandoned, but was completed in 1875 after costing Massachusetts about $18,000,000.

Hoover, Herbert Clark, the thirtieth man to serve as President of the United States, was born at West Branch, Iowa, August 10, 1874. His parents were Quakers. Orphaned at nine, he was reared by relatives, chiefly in the family of an uncle who had moved to Oregon. He was a member of the first class to graduate from Leland Stanford Jr. University, having specialized in geology and mining. After a short time he accepted a

Bachrach Studios

HERBERT HOOVER

position in the gold mines of Australia. He soon had new and greater responsibilities in China. On the way to China he stopped at Monterey, California, and was married to Miss Lou Henry, also a native of Iowa. He and Mrs. Hoover were in Tientsin during the Boxer troubles.

At the outbreak of the World War in 1914, Hoover was in Europe. He did a great deal to aid Americans stranded there. He was next placed in charge of Belgian relief work, expending about $1,000,000,000. In 1917 he was appointed U. S. Food Administrator. After the war he did a great deal for the relief of suffering Europeans.

In 1920 he was much discussed as a candidate for President. Shortly before the political conventions were held, he announced that he was a Republican. President Harding appointed him Secretary of Commerce. He held this position for eight years. In 1928 he was nominated for President. He was elected by a huge majority, receiving 444 electoral votes against eighty-seven for his Democratic opponent, Alfred E. Smith.

Hoover entered the Presidency in 1929 under apparently auspicious circumstances. For almost eight months there was an era of seeming prosperity. Then came the stock market crash, which was followed by an ever deepening economic depression. The efforts of the Administration to improve conditions appeared to be ineffectual. Hoover was nominated for re-election in 1932, but was overwhelmingly defeated, receiving only fifty-nine electoral votes to 472 for Roosevelt.

Hop, species of *Humulus*, a genus belonging to the nettle family. It contains two or three species of twining vines, with rough, palmate leaves and cone-like catkins, which are the so-called hops. The common hop is *H. lupulus*, which is native both to Europe and North America, and has long been cultivated for use in the making of yeasts and beer.

Hopkins, Johns, an American philanthropist, was born in Anne Arundel County, Md., May 19, 1795. A large part of the fortune which he accumulated in business he left for the founding of a free hospital in Baltimore and of Johns Hopkins University. He died in 1873.

Hopkins, Mark, an American educator, was born at Stockbridge, Mass., Feb. 4, 1802. He was graduated at Williams College in 1927, and studied medicine, but fortunately for the college accepted the professorship of moral philosophy in 1830. He served as president from 1836 to 1872, and remained a professor until his death. Garfield, one of his pupils, said that the ideal college was a log, with a student on one end and Mark Hopkins on the other. Hopkins died 1887.

Hor'ace, Quintus Horatius Flaccus, a Latin poet, born in southern Italy on Dec. 8, 65 B. C., was the son of a slave freed by his own labors. He received a fine education, proceeded to Athens to finish his studies, and while there joined the forces of Brutus. After the defeat at Philippi he returned to Italy, and was forced by poverty to make verses. He attracted the attention of Vergil, who introduced him to Mæcenas, the minister of Augustus, the Roman emperor, who raised him from poverty to wealth, Horace becoming poet-laureate. He died on Nov. 27, 8 B. C. Among his works are *Satires* (eighteen in number), *Odes* and *Secular Songs*. The *Satires* were published in 35 B. C. and a second volume in 30 B. C. His greatest works are the *Odes*, written at the age of forty-six, and the *Epistles*. The last of the *Epistles*, the *Art of Poetry*, was left unfinished. His works have been read by a hundred generations of schoolboys, and have supplied more proverbial phrases than all other Latin literature. He almost was the last of the great Latin poets. See *Life of Horace* by Milman.

Hora'tius. Horatius Cocles was a Roman hero, descended from the Horatii who defeated the Curiatii of Alba Longa in Rome's early struggle with that city. Horatius with Spurius Lartius and Titus Herminius held the entrance to the bridge over the Tiber against the attack of the army of the Etrurian king Lars Porsena, while their countrymen hewed down the bridge in their rear. Lartius and Herminius crossed on the bridge to the Roman side just before it collapsed; Horatius, finding himself alone with the hostile army in front and the foaming Tiber behind him, bravely plunged into the swift-flowing river, though clad in full armor, and swam safely to the opposite bank, greatly to the rejoicing of his fellow countrymen. Horatius has been widely popularized as a hero by Macaulay's poem in the *Lays of Ancient Rome*.

Ho'reb, Mt. See SINAI.

Horn, the name, in a general sense, applied to the hard bone-like substance growing from the heads of animals. Horns are of two kinds: one being a continuation of growth of the actual bone structure and the second being a hardening of the epidermis or skin. They may be solid or hollow; the hollow horn being but a single column, as a rule; the bony or solid horn is usually branched or pronged. The name is also applied to the nails, hoofs, claws, bills and quills of animals. Horn is manufactured into many articles of use and ornament, and has been so used from the earliest period. Thin plates of horn were once used for window-panes, lanterns and book-covers, whence the name horn-book. It is used in making handles for knives, forks, umbrellas and canes; for combs, buttons, drinking cups, snuff and other boxes. The horn in its natural form has been largely used for holding powder, many powder-horns being beautifully carved.

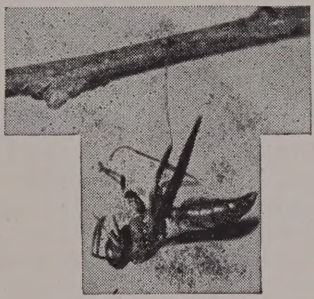
Hor'ned Toad, a lizard inhabiting the dry sandy plains of the western United States

LADY SPEX—The Story of a Mother Wasp, and How She Fed Her Baby in Its Snug Home

By Harold L. Madison

Illustrations courtesy of The Cleveland Museum of Natural History

Lady Spex, the Great Golden Digger Wasp, was preparing her house for a guest. It was her hope that she could get the Green Lady Cicada, who looked like a grasshopper, to cross her threshold, but failing in that she would not be averse to receiving this lady's lord, the Cymbal King. So the house had to be made ready, and the guest chamber, at the end of a long dark passageway, put in order.



CLINGING BY ONE FOOT

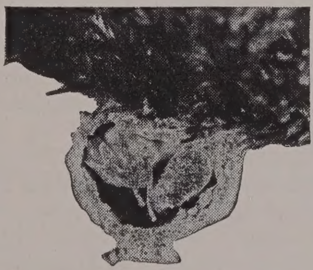
Now Lady Spex Wasp belonged to the aristocracy. The blue blood in her veins had come down through countless generations of savage ancestors. Her mother had stabbed a number of the relatives of the Green Lady Cicada, and Lady Spex Wasp was now out after the Green Lady Cicada herself.

Wherever Lady Spex went she always wore a costume of black and gold. She was a plotting, scheming, merciless wasp, so powerful that the Green Lady and her lord were always in mortal fear of her.

Lady Spex carries a poisonous dagger

It was in the month of August in the year—well, when everyone within the realm was flying or longing to fly, that Lady Spex rose with her biplane wings from the sand and gravel walk in front of her mansion and set forth in search of the Green Lady. Concealed in its scabbard, she carried a poisonous dagger. Whether the Green Lady was to come to her house depended on the keen vision of Lady Spex.

Over sand hill and tree top she went, ever on the lookout for her prey. Now the Green Lady was in her outdoor nursery putting her babies to bed, each beneath a quilt of bark. So busy was she that when she heard the hum of Lady Spex, it was too late to escape. Lady Spex did not give her even a chance. She approached from the rear, unshielded her poisonous dagger, reached around the waist of the Green Lady and plunged it into her body just below the belt. Almost instantly a numbing sensation passed over the body of our Green Lady, her limbs became useless—she was paralyzed.



BABY WASPS

Wasp grubs devour paralyzed Cicadas

Now, so delicately balanced was Lady Spex's flying machine that in order to carry the Green Lady home with her, it was necessary to hop off in the air from a high point. Placing the Green Lady on her back, she clasped her around the body and climbed to the top of a wood stalk. Then she opened her wings and swiftly flew to the entrance of her dungeon. Head first through the doorway, down the long dark passage to the guest chamber, she drew the paralyzed Green Lady.

Then Lady Spex placed one of her babies, wrapped in a white covering, by the Green Lady. After three days the baby awoke, hungry and alone except for the paralyzed cicada Lady Spex had put beside it. Lady Spex had gone, the front door was sealed, there was no food, except, of course, the motionless Green Lady.

Shall we not pass over the next ten days? For in that time the Spex child grew rapidly and the Green Lady gradually disappeared, eaten by the baby wasp.

And Lady Spex? Well, she went on her way, capturing other Green Ladies and Gentlemen and laying them away in other chambers in houses of sand on the hillside, until there were no more babies to provide for. Then she ate flies and sipped nectar of flowers until one cold winter morning, nipped in her career by the dagger of Jack Frost, this Great Golden Digger Wasp lay motionless just as her stinging dagger had placed so many beautiful green Cicadas. Lady Spex would harm no more Green Ladies. Thus winter brings this story to a close, for insects either die or sleep quietly through the cold, snowy months.

Some insects, such as the spider and the wasp, we would consider cruel if we did not know that they know no better. Only the higher animals and people seem able to learn what kindness is. And it is for us, who are blest with the ability to know what virtue there is in kindness, to practice it every day of our lives, and teach others to be kind also.

The scales of the body are spiny or granulated, and the head is provided with several sharp spines. The animal is not a toad, but a true lizard.

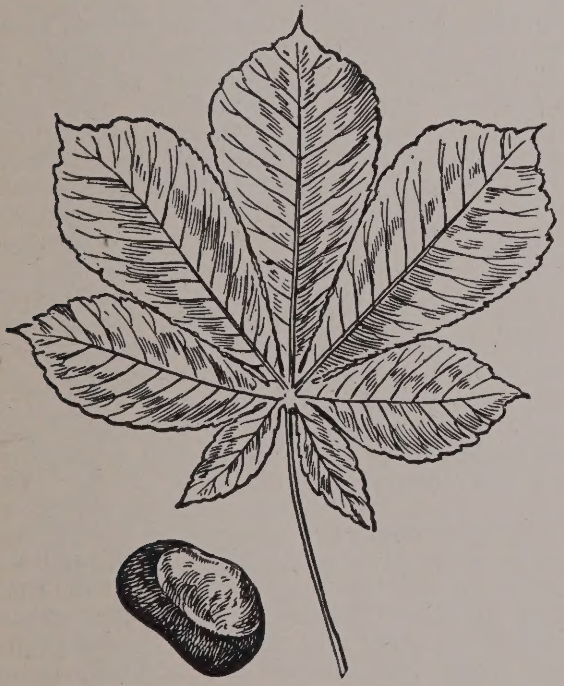
Hor'nell, N. Y., a city of Steuben County, on Canisteo River in southwestern New York. It lies 58 miles south of Rochester and 93 southeast of Buffalo, on the Pittsburg, Shawmut and Northern Railroad and at the junction of the Western and Buffalo divisions of the Erie Railroad. The latter of these railroads has large machine shops here. Hornell's industries include boot and shoe shops; factories for the tanning of leather; dynamo and electric motor works; wire-fencing, door, sash and blind manufactories, brick and clay works, furniture and large silk-mills. In the latter industry it ranks next to Paterson, N. J., and in the making of office trimmings and furniture its operations extend abroad, for shipments are made to London, England, and an office is established there. Hornell, formerly Hornellsville, had its name changed by legislative act in 1906. It has good schools, churches, a public library and three banks. Population 17,000

Hor'net, a species of wasp found in Great Britain and America, is usually brown or brownish red, marked with yellow, and is about an inch long. The white-faced hornet usually builds in trees, the nest sometimes of enormous size. Hornets are ancient and famous paper-makers. Their paper dwellings are waterproof, and consist of many chambers. The paper is chiefly made of decayed wood, which they manufacture by macerating it with their mouths; moss and other substances are also employed. In building, a worker flies from the nest and shortly returns with a ball of fibre; this she will turn about and about, chewing it until it is of the desired consistency. Then she goes to work to apply it to the structure, shaping the bit of paper with her mandibles. The builders patiently go over their work, retouching and strengthening the terraces of cells,— a monument of patience. After the inner cells are completed, they make a roof-covering, providing protection from weather, birds and other enemies. A hole in the bottom gives exit and entrance; through this spiders, flies and other small insects are brought in for the hundred and more hungry mouths waiting to be fed At the end of the season a hornet's nest is nearly or quite empty. In winter all die save a few females, who, after a period of sleeping in secluded nook in house or garden, will come forth in the spring to begin nestbuilding and the starting of a new colony. The female builds a few cells, lays eggs therein, from these develop workers, which will help her in building, feeding and other cares of the nest. Hornets are insectivorous. Their formidable jaws are their weapons, and they prey upon flies and butterflies, waylaying the home-going honeybee to take her honey. Spring and summer they include in their food the sweets of flowers, and show a liking for fruit — as the housewife can bear witness on canning day. They are great fly-hunters, sometimes entering houses and catching these household pests. It is frequently declared that hornets will not sting unless meddled with, but when disturbed they assuredly bear out their reputation for ferocity. The hornet is so called because of its antennæ or horns, horn-bearer. The white-faced hornet gave to man the suggestion of making paper from woodpulp. See WASPS. Consult *Scientific American Supplement*, Dec. 30, 1905, and "Two Little Paper-Makers" in *The Chautaquan* for 1902 (Vol. 35).

Horse, a common domestic animal having a solid hoof and only one toe developed on each foot. The horse, ass, zebra and quagga form a natural family separated from all other families of mammals. The single toe and solid hoof are not possessed by any other living animals. Horses are grass and grain eaters, but do not chew the cud. The horse has horny patches, called chestnuts, on the inside of both pairs of legs — just above the knee on the fore limb and below the hock on the hind limb. The horse has relatively small ears, a mane and a tail of long coarse hair. The long hairs of the tail grow from the base as well as the sides and tip, while the tails of the ass and zebra are tufted on the end. The horse is of especial interest on account of the peculiarity of its limbs and from the fact that its history or line of descent is known from fossil forms. It is a test case as to the evolutionary theory. (See EVOLUTION.) This animal walks upon the extreme tip of the third toe on both fore and hind feet. The splint bones are rudimentary traces of former toes. They have become so reduced that they correspond only to the second and fourth bones of the palm of the hand and the instep of the foot. (See FOOT.)

Horses were tamed many centuries ago, and probably were first domesticated in Asia. The earliest records concerning the horse are on Egyptian monuments dating 1900 B. C. The only truly wild horses are now found in Asia and Africa. Those of South America and of the plains of North America are believed to be descended from horses imported by the Spanish invaders and allowed to run wild. There are many varieties of horses, produced by breeding and crossing of different stocks. It is somewhat uncertain from what original stock the various kinds of horses have been derived. There are three main types: the more slender and rapid travelers, the heavy draft-horses and the tough, shaggy varieties. The first doubtless came from the Arabian stock; the heavy-bodied draft-horses are derived from varieties imported from Flanders, Normandy and Germany and are believed to be derived from the great black horse that inhabited nearly all Europe in ancient times. In the process of breeding the descendants of these large horses were mixed with the more slender varieties from Spain and the Orient, and this gave rise to intermediate forms. The tough, shaggy kinds very likely came from mountain varieties which originally lived in Asia Minor and the foothills of the Himalayas. The race horses have been carefully bred for speed, and furnish a good illustration of what can be accomplished by selection and attention to surrounding conditions. Records of speed began to be kept systematically in 1818; at that time the highest speed of a trotter was about one mile in three minutes; in 1859 this had been reduced to 2:19¾. In 1903 the trotting record was lowered to 1:58¼. A mile was paced in 1:55 in 1906. See Flower's *The Horse.*

Horse Chest'nut, one of the Buckeyes, a most cosmopolitan tree, found in the Old World and the New wherever climatic conditions allow it to exist. It makes a dense shade, is one of the most popular shade-trees of Europe, grows vigorously in this country, is common in public and private parks, and is planted along roadsides. Winter buds of large size and a polished brown tip the twigs, and no fairer sight is given the tree-lover than the "unfolding of the leaf bundle, the lifting of the pale green, silvery tent." The blossoms are very fragrant, telling of the tree a long way off. The fruit, a large nut, mahogany colored with a scar of white, is very bitter; while not edible, it at one time was considered to have virtue, and was carried in the pocket to prevent rheumatism.


HORSE CHESTNUT

Hor'ticul'ture, the art of growing fruits, vegetables, flowers and plants for domestic use and for decoration. It applies the known principles of chemistry, physics, plant-physiology etc., and includes vegetables and fruit-growing and floral and landscape-gardening.

Fruitgrowing has developed remarkably within the last 60 years in the United States. Previous to that time it hardly was a separate industry in any large section of the country, but gradually the parts of the country suited to particular kinds of fruit-growing have been located; for example, the peachproducing areas of Delaware, Maryland, New Jersey, Michigan and Georgia, the grape section of New York and Ohio and the semitropical fruit-regions of Florida and southern California. In consequence the various phases of fruitgrowing as a business have become differentiated. Tillage, pruning, spraying, packing, harvesting, transporting etc. have all come to demand special attention. The state experimental stations of the agricultural colleges have been of great service in promoting the development of this industry, especially where they have been able to investigate the different problems of the various localities.

Vegetable growing has undergone a somewhat similar development. The growth of large cities created a demand for a great variety of vegetables. With increased transportation facilities it became practicable to send the early vegetables from the south to the towns and cities of the north, and this business has in the last 30 years assumed large proportions. Some important regions for the production of early vegetables are Virginia, North and South Carolina, Florida, Texas and California. The growing of early vegetables under glass is also a business of considerable importance in the vicinity of cities. Horticulture gradually merges into several of the various phases of agriculture.

Floriculture is the third main branch of horticulture. This includes landscape-gardening, which is the art of so growing and disposing of flowers and plants as to create a beautiful landscape effect. Examples of the product of the art are to be seen in our well-kept city parks and in the private grounds of some persons of means throughout the country. Landscape-gardening is really one of the fine arts.

Along with horticulture have developed various allied industries, as that of the nursery, of seed production, preparation of fertilizers, manufacture of baskets and barrels, canning factories, etc.

Hose'a or **Osee',** a Hebrew prophet who lived probably during and after the time of

Jeroboam II, about the middle of the 8th century B. C. He is mentioned nowhere in the Old Testament except in the book which bears his name, the chief interest centering about him being in the first three chapters regarding his marriage and prophecies. He is mentioned several times in the New Testament under the name of Osee.

Hosmer (*hŏz′mẽr*), **Harriet,** an American sculptor, was born at Watertown, Mass., Oct. 6, 1830. A delicate child, she was compelled to live mostly in the outer air. She began modeling at home after a few lessons at Boston and St. Louis. Her first work was a reduced copy of Canova's *Napoleon,* followed by *Hesper* in 1852. In that year she went to Rome and there entered the studio of John Gibson. Here she copied from the antique. Her first full-size figure, *Œnone,* was completed in 1855. The work which brought her into renown was an original statue of *Puck* and a companion figure called *Will-o'-the Wisp.* Among her other statues are *Zenobia, The Sleeping Faun* and a companion piece, *The Waking Faun.* She made the statue of Thomas H. Benton for the Missouri legislature. She resides at Rome.

Hos′pitals, places for the care of the sick or wounded, were first known as *hospitia,* and were used to relieve lepers, when leprosy was a scourge in Europe. The modern hospital is usually divided into wards or wings, extending from the main body, each ward being in charge of a separate force of attendants and often devoted to the treatment of a particular disease. Hospitals, as a rule, are maintained by the state, county or city, but there are many now endowed and maintained by private individuals. Some of the oldest and most famous hospitals are St. Thomas (London, 1553), St. Bartholomew (London, 1546) and Bethlehem (London, 1547). The Hotel de Dieu, Paris, founded in the 17th century, is probably the oldest and most famous in France. See *Notes on Hospitals* by Florence Nightingale.

Hot′bed and **Cold-Frame** are terms often used interchangeably; but the former refers rather to a seedbed made by surfacing a deep layer of fermenting compost or horse-manure with a few inches of finely-worked loam; while cold-frame refers to the rectangular, wooden frame having a cloth or glass cover, which protects from frosts the young plants growing in the hotbed beneath. So we may speak of starting plants in a hotbed or under glass. The whole is a substitute for a hothouse in early spring. The fermentation which heats the soil (whence the name) should be spent before planting The cold-frame prevents too rapid radiation of the internal heat. The glass-sash slopes to the south and is loose or hinged, to allow ventilation when weather permits. The use of this arrangement makes sprouting and forcing possible when the soil outside is too cold for planting. Hotbeds are not started before the latter part of February, except in the southern states. The hotbed often serves as an intermediate stage for tender plants between the indoor windowbox and outdoor conditions. Cold-frames are often used apart from hotbeds to force hardy perennials, as violets, to early blooming. They use no heat except such sun-light as they store up; hence their name.

Hotel′ (French *hôtel*), an enlargement of what formerly was called an inn. Since the era of railroads, hotels have been built to marvelous sizes. The main difference between European and American hotels is that in the former there is a price upon every dish ordered in the dining-room, while the latter makes a fixed rate for meals and room.

Hot Springs, a city and the county-seat of Garland County, Ark., is 55 miles southwest of Little Rock; on the Rock Island and Little Rock and Hot Springs Western railroads; 600 feet above tidewater; near the eastern side of the Ozark Mountains. It is widely noted for the hot waters that flow from 44 springs included in a space of 10 acres on the western side of Hot Springs Mountain. The waters of these springs, ranging in temperature from 76° to 157° Fahr., the daily flow of which is 1,000,000 gallons, are owned and controlled by the United States government under the direct care of the Secretary of the Interior, and are beneficial in a multitude of diseases. Notable cold springs, famous for their curative properties, are Potash-Sulphur and Mountain Valley.

In 1832 four sections of land, the thermal springs being in the center of the district, were set off by Congress as a government reservation. Since then the government has established the Army and Navy Hospital on the Hot Springs Mountain, and expended large sums of money in improving and developing the reservation. The government bathhouses, extending along Central Avenue, are tasteful in design and have attractive surroundings. There are many hotels, the Eastman, Arlington, Park and Majestic ranking among the largest in the country; and as a health and pleasure resort Hot Springs is deservedly popular, having annually more than 100,000 visitors.

The famous novaculite whetstone quarries are in the northern part of the city.

Hot Springs was settled about 1804, incorporated as a town in 1876, and chartered as a city of the first class in 1879. Public buildings, recently completed, are a fine courthouse that cost $150,000, city hall and operahouse, costing $100,000. A similar amount is being expended on schoolhouses and churches. Population 14,564.

Hot′spur, Harry. See Percy.

Hottentots (*hŏt′t’n-tŏts*), a people who were in possession of Cape Colony, Africa, before the settlement by the whites. The name was given by the Dutch to the real Hottentot and to the Bushman, though they are distinct families. In number there are about 17,000 Hottentots proper and 100,000 half-breeds. They are of medium stature, have light-brown skin, hair growing in woolly knobs, high cheek bones and small hands and feet. Their language consisted of three dialects, but since the advent of white men (1652) they have adopted the languages, dress, manners and vices of the Europeans. See *History of South Africa* by Theal and *Expedition of Discovery into the Interior of Africa* by Alexander.

Hour′glass, a device of two glass bulbs connected by a very narrow and short neck, having in one bulb a sufficient amount of colored sand, which, in running from one bulb to the other, marks an hour. It was in use by the ancients even long before the sundial, and in the 16th and 17th centuries often stood on the pulpits of churches to measure the length of the sermon, where its falling sands were watched by anxious eyes. The three-minute glass, on the same principle, is often seen nowadays.

Housatonic (*hōō-sa-tŏn′ĭk*) **River,** about 150 miles in length, rises in Massachusetts, and, flowing through Connecticut, discharges into Long Island Sound. It affords water-power to many manufacturing villages. The scenery along its course is very beautiful.

House-Pets may vary extremely in purely utilitarian value, but all have certain values in bringing out in children qualities of kindness, sympathy and appreciation of responsibility; and the value of pets may vary in the degree to which they serve this latter end. While pets, as pets, may range from toads to horses, household pets include a rather definite circle of animal life: those which more strictly share the domicile of human creatures, as dogs and cats, and those kept in near proximity, as rabbits, guineapigs etc.

House-pets, strictly, may be narrowed to include only canaries, parrots, cats and the smaller breeds of dogs. Large dogs, rabbits, guineapigs, squirrels, poultry and pigeons belong to the household but not in the house. As to use, dogs might be classed as watchdogs, companions for children, sheepdogs and hunting-dogs, the qualities of the last two not being necessarily related to any desirability as house-pets. The most effective watchdogs are those kept inside at night, away from certain persuasions of evildoers; such dogs are fox, bull, airedale and other terriers, the spitz and poodle, all being active, alert and intelligent. Valuable outside watchdogs are the Great Dane, bred to this for generations, the English mastiff and the Newfoundland. As companions and protectors of children the favorites are the St. Bernard, the English mastiff and the Newfoundland, though certain families of the latter may show uncertain tempers. The *dachshund* has special ability in protecting poultry from skunks, weasels etc. Aside from his herding abilities, the Scotch collie is a great favorite of young children. Certain of the terriers, small spaniels and pugs seem to be of little use except as ornaments and pets. The cocker, one of the spaniels, is in many respects almost as good a general purpose dog as the collie or Newfoundland. Dogs should not be overfed, or be given sweet or greasy food; but the diet should be a mixed one. Too much meat makes them smell "doggy." Small bones are apt to be splintered in chewing, and so choke the dog. Prof. Hodge has aptly said: "A gnawing-bone is the dog's tooth-brush and should be kept well-supplied at all times, both for business and amusement." A dog is the best kind of a flea-trap. A castile or ivory soap lather will kill the fleas, and should be given for the dog's sake once a week in summer and once a month in winter. But one person should have the care and training of a dog. "A whip ruins more dogs than it cures." Yelling at a dog and chasing him make him nervous. Give praise when deserved. Tricks should be taught alone in a quiet place, always repeating the command in the same words, with rewards of food for the effort made by the dog. (See Dog).

"The cat is the only animal that has been tolerated, esteemed and, at times, worshipped, without a distinctly valuable quality" (Prof. Shaler). Cats have the advantage of being cleaner and less boisterous than dogs. Cats need access to fresh water and to grass or catnip, which is their medicine. The system of a cat that has been catching mice does better when supplied with milk. Abundant feeding prevents the killing of birds and chickens — and also of mice. A cat kills, on an average, 50 song-birds a year, and a single cat has been known to destroy six nests in a day. (Forbush.) The cat returns readily to the wild state, whereas the wild dog seems to be an extinct species. White cats, while more docile than black ones, have weaker constitutions. Of the Maltese or "blue" cats, the blue-eyed ones are favorites and hardy. The long-haired varieties are better pets than short-haired ones, but are not so good mousers and possibly are less hardy. The artificial conditions of their life are very conducive to tuberculosis, as shown by the large percentage having nodules on the intestines and lungs. Cats and dogs that run loose and have access to garbage are possibly dangerous carriers of disease; children should not be permitted to fondle either about the face. (See Cat.)

Canaries are naturally hardy, and disease is the result of neglect. The cage and perches should be kept very clean. Drafts, extremes of temperature and the steam of the kitchen are to be avoided. The best seed is equal amounts of canary-seed, rapeseed and millet. Supply sand, cuttle-fish and greens, but avoid sweets. Loss of voice is due to overfeeding, a cold or too much singing. Persian powder in the cage and among the feathers destroys lice. (See CANARY.)

Rabbits and guineapigs are popular as yardpets, though the former are often bred for eating, as the Belgian and Flemish varieties. The lop-eared varieties occur in various colors and require mild winters. The Himalayan is a smaller breed than the last, is hardy, and has a beautifully marked "mock ermine" fur. The Angoras, in white and other colors, are popular, but hard to keep clean on account of their long fur. The Dutch rabbits are smaller than most, are hardy and prolific; they are colored with a white collar. Rabbits breed several times a year, with from five to twelve in a litter. Clean straw should be provided for the nests. Provide clean water every day. Feed on hay and oats, with turnips, carrots and apples. Feed grasses and leaves only after partly drying them out. Salt should be provided at all times. The pens should be shaded, be dry, have good ventilation, be protected from rats by wire netting, and furnish room for exercise. Does with young must be kept apart. The young are liable to internal injury if picked up by their bodies. Rabbits should be handled by their ears or by the nape of the neck. (See RABBIT.)

Guineapigs or cavies of the common sort are black, chocolate brown, reddish, gray, yellow, white and spotted. The Abyssinian and Peruvian varieties are both long-haired, the former albino and the latter in colors. The animals have nothing to recommend them as pets except their cleanliness and general hardiness. Their general treatment is the same as that of rabbits.

Pigeons are attractive because of their variety of color and form and for the possession of many human-like traits, some altruistic, others not. The best quarters, unless a special house be provided, are those rigged up in a loft, rather than boxes nailed outside of a barn, as they furnish more protection. If the birds are confined, an outside cage should be annexed. Pigeons breed in pairs, and must have a separate home for each family. They should be given plenty of clean water to bathe in, gravel, coal ashes, etc. to peck at, grain and grass seeds to eat. They are fond of hempseed, which may be used to tame them. The nests should have absorbents, as sawdust or fine shavings of seasoned lumber,—never from resinous pine. Under good management five squabs a year can be raised by each pair. (See PIGEON.)

Many wild animals, as raccoons, rats, squirrels etc., can be kept as pets, and seem to be reconciled to their lot if captured young enough. The main requirements for health are cleanliness, exercise and food as nearly like their natural diet as possible. See Biggle's *Pet Book* and Hodge's *Nature Study and Life*.

House-Plants must contend with too dry air, too high temperature and lack of light and fresh air. They may be classed as those grown principally for their foliage and as those principally grown for their blossoms. The best plants of the first kind are those with leaves of leathery nature, or adapted to retain their moisture by other means. Such plants are the English ivy, the various cacti, century-plant, rubber-plant, fan and sago-palm and screw-pine. The flowering plants are best brought into the room when about to bloom and removed when through; of these are the "calla," chrysanthemum, cyclamen, freezia, heliotrope and primrose. The begonia, fuchsia, "geranium" and oxalis, though helped by similar treatment, are apt to be deprived of such benefits. Because of the moist air, the kitchen is an excellent place in which to grow these plants and to bring plants from the other rooms to recuperate, if it is impossible to provide a special room that can be kept moist. Zinc trays with moss, pebbles and water, to set the pots in, help to keep the air moist. Nonporous pots or vessels dry out less quickly than porous crockery. All should have holes in the bottom, and should stand in or above trays or saucers to secure good drainage. Thus the plants may be plentifully watered without depriving the roots of needed air. Broken stones or bits of crockery in the bottom facilitate drainage and soil-ventilation. Small pots need watering oftener than large ones. Most plants do best in a soil of equal parts of rotted sod, old leaf-mould, well-decayed cow manure and clean sand. Pots should not be too full. Plants should be potted before growth begins or after it stops. After growing all summer they need a rest, with little water, in a cool place. Insect and fungous pests are usually troublesome on account of lack of water and fresh air. Plants should be washed off with warm water; scale insects should be scraped off with a stiff brush. Night temperature need not be over 50 degrees, and may fall even ten degrees lower. Special directions for the growth and care of some of the more popular house-plants are here given. Begonias will grow better in north windows than will many other plants, but need considerable sun in the winter. They require earth composed of three parts loam and one part rotted manure. The fibrous-rooted varieties are more easily grown than the more tuberous plants. Cacti require soil, half fibrous loam and half coarse, mortar rubbish. They should be put in large pots one third full of rough coke or broken crockery to secure perfect drainage, and should seldom be repotted. They require all the sunlight available. Fuchsias are among the easiest plants to manage in the average living-room, and will do well in a north room that is kept warm, as this reproduces somewhat the shady condition of their original subtropical home. They thrive in ordinary garden-soil, but need frequent applications of liquid manure; and bloom best if the roots are somewhat cramped. They are grown from seeds or slips with two or three leaves. Pelargoniums or "geraniums," as they are commonly known, grow best in a pliable clay loam without manure. The few diseases troubling these plants are apt to be due to manure or too much water. Slips should be started in two-and-one-half inch pots, and be gradually repotted in larger sizes. The soil should be pressed in firmly to make a firm growth. They may be fed manure-water when they reach the five or six-inch pots. The rubber plant is the most popular of all foliage plants, over 75,000 being sold every year. It is tough, thrifty and can stand poor light. Bushy plants may be obtained by topping, or through natural branching, coaxed by two or three months' rest in the spring. They are injured by dust and should be frequently sponged. Bulbs intended for forcing should be set in pots, which should be buried outdoors in the ground for several weeks or set in a cool, dark basement.

Houston (*hūs'tŭn*), an important city and the seat of Harris County, Texas, is situated about fifty miles from natural deep water and twenty-five miles from the head of Galveston Bay, on the Houston Ship Channel. The city has excellent railway facilities and is connected with the Gulf and all ocean ports by seventy steamship lines.

Houston is the largest city in the State of Texas and the second largest city in the entire South. It ranks first among United States ports in the exportation of cotton and it is the third port in the United States in export tonnage. Its principal industries are petroleum refinings, vegetable oil pressing and refining, rice milling, and the manufacturing of cottonseed products, car wheels, oil well machinery and supplies, cement and fertilizer, packing house products, confections, boilers and tanks. There are numerous iron and brass machine shops, locomotive repair plants and flour and textile mills. Approximately one-seventh of all American oil is controlled by companies with main offices in Houston. Among the leading manufacturing establishments are the Shell Refining Company; the Sinclair Oil and Refining Company; the Texas Company; the Texas Chemical Company; the Texas Portland Cement Company; the Houston Packing Company; the Maxwell House Product Company, and the Houston Textile Mills. Houston is also one of the largest rice and lumber markets in the Southwest.

The Houston Ship Channel which is of extreme importance to the city commercially, is an artificial waterway to the Gulf of Mexico. Prior to the dredging and straightening of the Channel (1919-25), it was known as the Buffalo Bayou. The cost of construction, which was borne by the Federal Government and Harris County, amounted to $20,000,000. The channel was dredged to a depth of thirty feet and a minimum bottom channel of 150 feet. Its construction has made it possible for the largest of ocean-going merchant vessels to now proceed to Houston from the Gulf.

In addition to its well developed land and water transportation facilities, Houston maintains well equipped air ports and landing fields, chief among which are the Houston Airport (1927) and the Commercial Airport. The latter is operated by the Houston Airport Corporation. It is situated nine and one-half miles southeast of the city and provides facilities for two airmail lines, five commercial companies and two passenger lines on regular schedule.

Cultural development has made rapid strides toward advancement in recent years. There are eighty-one public grade schools, fourteen junior high schools, fourteen parochial schools and eight high schools in the city. An excellent art museum is situated here and there are five theatres, and churches. Sam Houston Hall has a seating capacity of 20,000. The William M. Rice Polytechnical Institute, a co-educational institution founded in 1912, is situated here.

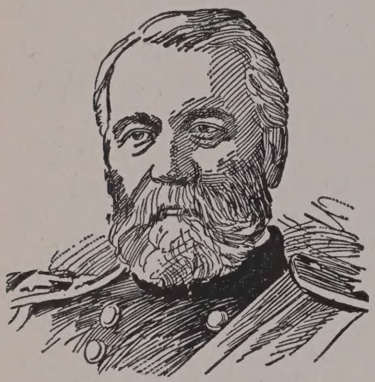
The first settlement was made in Houston in 1836. The city is named after Sam Houston, second President of the Republic of Texas. In 1910 the population had grown to 78,800. To-day approximately 73.4 per cent of the population are native whites; 19.4 per cent are Negroes, and 7.2 per cent are foreign born. In 1930 the population was 292,352.

See Houston, Samuel; Texas.

Houston, Samuel, president of Texas when it was a republic, was born in Virginia on March 2, 1793, and was adopted and reared by a Cherokee Indian in Tennessee. He enlisted in the army in 1813, and by his bravery rose to the rank of second lieutenant. After leaving the army he studied law, and in 1823 and 1825 was a member of Congress and in 1827 governor of Tennessee. After three months of married life with the daughter of a former governor, he, in 1829, abandoned his home to go to the Cherokees beyond the Mississippi. He remained here three years, and at the outbreak of war between Mexico and Texas was made commander-in-chief. On April 21, 1836, he defeated the Mexican force under Santa Anna at San Jacinto and won the independence of Texas. He was elected its first president and was re-elected in 1841. When Texas came into the Union, in 1845, he was sent to the United States senate and in 1859 became governor of the state. He opposed secession, and was deposed in March, 1861. He died on July 25, 1863.

How'ard John, a philanthropist and prison-reformer, was born in Middlesex, England, about Sept. 2, 1726, and received his education by private tutors. He inherited a fortune from his father, and in 1756 sailed for Lisbon, but was taken prisoner by the French and thrown into prison, where his own experience first gave him his ideas of prison-reform. His life was devoted to prison-reform. To this end he visited all penal institutions. While in Russia he contracted typhus fever and died on Jan. 20, 1790. He published two works on the state of prisons and hospitals. He is honored as one of the most self-denying and benevolent of men. See *Lives* by Dixon, Field and Stoughton.

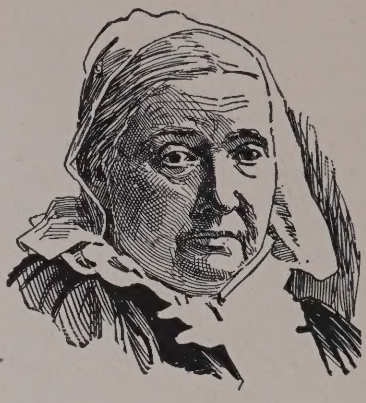
Howard, Oliver Otis, an American general, was born in Maine, Nov. 8, 1830, and graduated from West Point in 1854. He commanded a regiment in 1861, and was made brigadier-general for gallantry at the battle of Bull Run. He lost an arm at the battle of Fair Oaks, but afterwards commanded the army of the Tennessee. He was commissioner of the Freedmen's bureau from 1865 to 1872. In 1869 he was made president of Howard University, Washington, an institution for the education of the colored people. In 1877 he led an expedition against the Nez Percé Indians, compelling the surrender of Chief Joseph, and later against the Piutes. He was made major-general in 1886, succeeding General Hancock in the command of the division of the Atlantic, where he remained until his retirement in 1894. In 1895 he founded Lincoln Memorial University at Cumberland Gap, Tennessee. His *Autobiography* was published in 1907. He died Oct. 26, 1909.



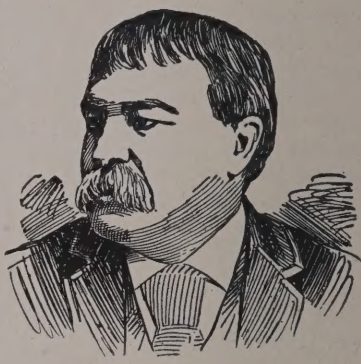
GEN. O. O. HOWARD

Howe, Elias, inventor of the sewing machine, was the son of a farmer, and was born at Spencer, Mass., July 9, 1819. He worked for a manufacturer at Cambridge, and there conceived the idea of the sewing machine. After five years' labor he completed and patented it, but was penniless and could find no sale for his invention. He sought England unsuccessfully, and on his return found his machine imitated. After a long lawsuit he recovered his rights, organized a company to manufacture his machines, and made a large fortune. He served in the 7th Connecticut regiment during the war. He died at Brooklyn, N. Y., Oct. 3, 1867.

Howe, Julia Ward, the wife of Dr. S. G. Howe, was born at New York, May 27, 1819. She was carefully educated, and early wrote plays and poems. While on a visit to Washington during the Civil War she wrote the popular *Battle Hymn of the Republic.* She was a powerful advocate of woman's suffrage and a founder of the New England Woman's Club, of which she has been president. She published many poems and essays. She died Oct. 17, 1910.



JULIA WARD HOWE



WILLIAM D. HOWELLS

How'ells, William Dean, an eminent American author, known in the Old World as well as the New as novelist, poet, critic, dramatist and essayist, was born at Martin's Ferry, O., March 1, 1837. The son of a printer and journalist, he early became familiar with journalistic and literary work and decided to follow it as a career. His first contributions were to the *Cincinnati Gazette* and *Ohio State Journal.* From 1861 to 1865 he was consul at Venice, where he wrote his papers on *Venetian Life.* After his return he wrote for the New York *Tribune*, the *Times*, the *Nation*, the *Atlantic* and, later, for the *Century*, *Harper's Magazine* and the *Cosmopolitan.* He was editor of the *Atlantic* during 1871-81, and afterwards held a position on *Harper's Magazine.* His real success, however, was as a writer of fiction, among his most popular novels being *Their Wedding Journey*, *The Lady of the Aroostook* and *The Rise of Silas Lapham.* His farces, *The Sleeping Car*, *The Drawing Room Car*, *The Elevator* and *The Mousetrap*, are the best specimens of his humor. In 1904 he received from Oxford University the degree of Hon D.C.L. Mr. Howells also published very valuable literary studies, as *Literature and Life,* and suggestive studies of actual and ideal society, as *A Traveler from Altruria;* besides collections of poems. He died in 1920.

How'itt, William and Mary, English writers of the first half of the 19th century. William was born in 1795 at Heanor, Derbyshire, England. On April 16, 1821, he married Mary Botham, born at Uttoxeter, England, March 12, 1799. The record of their lives is a record of the books they wrote. Some of their joint productions are *Literature and Romances of Northern Europe, Stories of English Life* and *Ruined Abbeys of Great Britain.* Mary Howitt was the first to translate the works of Hans Andersen into English. William wrote *History of Priestcraft, Rural Life in England, Student Life in Germany, Homes and Haunts of the British Poets* and *Poems.* They both died at Rome, William on March 3, 1879, and Mary on Jan. 30, 1888. See *Mary Howitt, an Autobiography,* edited by her daughter, Margaret.

Hubbard, Elbert (1859–1915). When Elbert Hubbard was fourteen years of age, he left his father's farm at Bloomington, Ill., to work in a printing shop. Thus he began his training as a publisher and writer in his later life. After a time he entered in the employ of a soap factory. This enterprise grew, and with it grew Elbert Hubbard's knowledge of business. He became part owner of this company, but though his financial success was assured if he had remained, he gave up his association with the concern to establish a colony of his own at East Aurora, N. Y. There he developed a publishing business, specializing in artistic printing and binding. There also he established handicraft shops in metals, leather, and wood. He edited two magazines, *The Fra,* and *The Philistine,* writing all the articles in the latter and many in the former. His *Message to Garcia* (1898) has become world-famous. His *Little Journeys* (first issued monthly) are excellent popular biographies. In these he has selected the names of famous painters, educators, authors, business men, women, statesmen, etc., and presented their lives in a most interesting way. They are classics of their kind. *Hollyhocks and Golden Glow* (1912) is an example of his best literary style and cherished thoughts on life. He was a champion of the business man, and wrote many "success" articles. As a lecturer he was widely known. When the *Lusitania* was sunk by a German submarine during the World War, Hubbard and his wife were on the ship. Linking their arms, they retired to their stateroom and died together. In a way it was a fitting close, for Mrs. Hubbard was an excellent essayist and their spirits and achievements were closely intertwined.

Huck'leberry, the fruit of various species of *Vaccinium* and *Gaylussacia,* genera which belong to the heath family and are sometimes considered as forming a family by themselves, known as the huckleberry family. The former genus is restricted to America and contains about 40 species; the latter is widely distributed and contains about 125 species. The huckleberries of the market are as often called blueberries, and the various species have received numerous names, such as tangleberry, whortleberry, bilberry, deerberry, farkleberry etc. The common huckleberry of the markets is *Gaylussacia resinosa,* the black huckleberry. The species of *Vaccinium* are more frequently called blueberries.

Hud'son Bay, a gulf or rather inland sea in the northeast portion of North America, is wholly landlocked, except on the north, where Southampton Island and Fox Channel lie between it and the Arctic Ocean and where Hudson Strait, running 500 miles southeast, joins it to the Atlantic. Including James Bay on the southeast, it is 1,000 miles long and, on an average, 600 miles wide, and covers an area of about 500,000 square miles. This sea is the great drainage reservoir of the Canadian northwest territories. Of the many rivers flowing into it the two largest are the Churchill, whose deep and narrow mouth forms the best harbor on the shores of the bay, and the Nelson, which is navigable for 70 or 80 miles. The possibility of opening a short route for transportation of the products of the great grain fields of the northwest through Hudson Bay to Liverpool has engaged the attention of the Canadian government, and as a result of surveys and studies of climatic conditions it is thought that this may be found practicable.

Hud'son Bay Company, a corporation formed in 1670 by Prince Rupert and 17 other noblemen for the purpose of importing furs and skins into Great Britain. The company was given the ownership of the entire region draining into Hudson Bay. In 1869, shortly after Canadian federation, the Company ceded all its rights to Britain, receiving $1,500,000 indemnity from the Dominion of Canada and reserving all its forts, 50,000 acres and one twentieth of all lands between Red River and the Rocky Mountains. See Bryce's *Remarkable History of the Hudson Bay Company.*

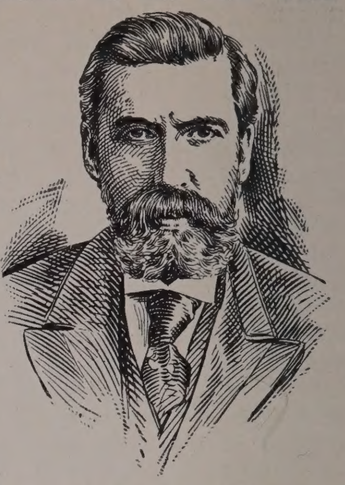
Hudson, Henry, English navigator, is first heard of in 1607, when he embarked in a small vessel in search of a northeast passage. In his second attempt, in 1608, he reached Nova Zembla, and in his third, giving up all hope of finding a northeast passage, he sailed south, discovered the river now bearing his name, and sailed up it for 150 miles. He set off upon his last voyage in 1610, discovered the strait now called Hudson Strait, and passed through it into Hudson Bay, where, he passed the winter. When food gave out, the sailors mutinied, and cast Hudson and eight others adrift in the summer of 1611. The ringleaders perished in a fight with savages, and the survivors after great suffering reached England. All these voyages were made in the service of Dutch merchants. See George Asher's *Henry Hudson the Navigator*.

Hudson, N. Y., a city, port of entry, county-seat of Columbia County, on the Hudson River, about 30 miles from Albany. It is in an agricultural region, and has the following manufacturing establishments: Sash and blind factories and foundries and it makes machinery, car wheels, knit goods, and creamery products. The notable buildings are the State House of Refuge for Women, the State Volunteer Firemen's Home, the hospital, the orphanage etc. The city owns and operates the waterworks. Claverack Landing was settled in 1783, became Hudson in 1784, was incorporated in 1785, and was made a port of entry in 1790. It has the service of two railroads. Population 11,417.

Hudson River, a river in New York state and one of the most beautiful in America. It rises in the Adirondack Mountains, 4,326 feet above sea level. At Glens Falls it drops 50 feet, then, taking a southerly direction, flows into the bay of New York. There is tidal influence for 151 miles from its mouth to Troy, and it is navigated by large steamboats to Albany. About 60 miles from New York city the river enters the highlands, the scene of Arnold's treason and André's death, towering abruptly from the water to a height of 1,600 feet. A few miles below are the United States Military Academy at West Point and the ruins of Fort Putnam. On leaving the highlands, the river widens to four and one half miles for 13 miles of its course, and is called Tappan Bay. Below, on the right, is a wall of rock, called the Palisades, from 300 to 500 feet in height, extending nearly 20 miles as far down as the upper part of New York city. From this point the river is called North River. The Hudson is 350 miles in length, and was named after Henry Hudson. Fulton's first steamboat was tried on its waters. A tunnel under the river between Jersey City and New York connects the latter with Greater New York. See the *Panorama of the Hudson*, published by the Bryant Literary Union of New York.

Hue' (*hōō-ā'*), the capital of Anam, a French protectorate in Asia, is ten miles from the mouth of the Hue River. In 1801 it was strongly fortified by French officers. The heart of the city is occupied by the palace; much of the rest of it is filled with mud huts. There is little business. Population, with suburbs, 50,000.

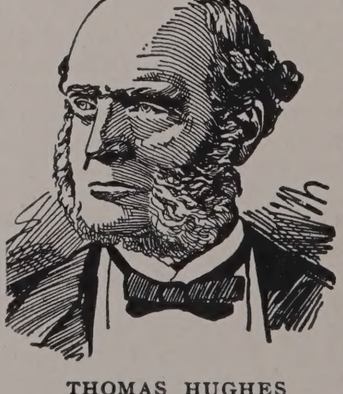
Hughes, Charles Evans, was born at Glens Falls, N. Y., April 11, 1862. He was educated in the public schools of Newark, N. J., and graduated from Brown University in 1881. During the next two years he taught mathematics at Delaware Academy, Delhi. He graduated from Columbia Law School, in 1884 and was prize-fellow from 1884 to 1887. He was admitted to the New York bar in 1884, and practiced there from 1884 to 1891. He was professor of law at Cornell Law School from 1893 to 1895 and in New York Law School from 1893 to 1902. He achieved national distinction as chief counsel for the Armstrong Committee in its life-insurance investigation (1903–4). In 1906 he was elected governor of New York, and in 1908 was re-elected. He resigned in 1910 to become associate justice of the U. S. Supreme Court, but left the bench in 1916 after having been nominated for the presidency by the Republicans. He was defeated by President Wilson by an electoral vote of 276 to 255. Hughes opposed Article X of the Covenant of the League of Nations, and urged special recognition of the Monroe Doctrine. In 1921 he was appointed Secretary of State by President Harding, and late in the same year was chairman of the Washington Conference for the limitation of armaments.



CHARLES E. HUGHES

Hughes, James Laughlin, Canadian educator, born Feb. 20, 1846, near Bowmanville, Ontario. He began teaching at 18, and in 1871 became principal of the provincial model school at Toronto. In 1874 he was appointed chief inspector of schools for Toronto. a position he held for more than forty years. He did much to improve the methods of teaching, particularly reading. His brother, Sir Sam (1853-1921) was long prominent in the Canadian militia, entered the Dominion House of Commons in 1892, and was Minister of Militia and Defense 1911 to Nov. 1916. To him was due in large measure the prompt organization of the Canadian Expeditionary Forces in 1914.

Hughes, Thomas, was born at Uffington, Berks, England, Oct. 20, 1823. He was educated at Rugby, entered Oxford in 1841, and was called to the bar in 1848, becoming a member of the chancery bar. In 1856 he published *Tom Brown's School Days*, a life-like and truthful picture of school days at Rugby. This is a book which will never die, and is



THOMAS HUGHES

perhaps the best boy's book that was ever written. The chief characters are drawn from life. The book throws great light on the character of that greatest of teachers, Dr. Arnold. In 1858 came out *The Scouring of the White Horse;* in 1861 *Tom Brown at Oxford;* and in 1869 *Alfred the Great.* He was all the time practicing law, and became queen's counsel in 1869 and county court judge in 1882. He early became associated with Maurice and Kingsley in the work of social and health reform among the London poor. He also represented Frome in Parliament from 1868 to 1874. He gained the good will of the working classes by his endeavor to promote a better understanding between employers and their men. In 1880 Hughes assisted in founding a coöperative colony in the United States, describing it in his *Rugby, Tennessee.* To him Chicago owes the founding of its public library in 1871. He died at Brighton, Sussex, March 22, 1896.

Hu'go, Victor Marie, was born at Besançon, France, in 1802, and was educated at Paris and Madrid. He produced a tragedy at fourteen; and nearly won the Academic prize at fifteen. At twenty he published his first *Odes and Ballads*, following it by *Hans d'Islande* the next year and then by his famous *Cromwell*, a tragedy almost impossible to act and difficult to read. In 1828 he published his *Orientales*, which is masterful in style and beautiful in wording. In 1830 appeared his great lyric *Hernani*, which gave rise to long arguments between the Romanticists, Hugo's party, and the Classicists; the year 1831 saw the birth of his famous novel, *Notre Dame de Paris* and the production of his plays, *Marion Delorme* and *Le Roi s' Amuse* ("The King is Amused",) which was allowed to be produced for only one night. Then, in quick succession, came *Lucréce Borgia*, *Marie Tudor* and *Claude Gueux*. *Ruy Blas*, the next greatest drama after *Hernani*, was produced in 1838. Then followed a period of comparative inactivity until 1856, when his beautiful poems, *The Meditations*, appeared. These were followed in 1862 by the publication, in ten languages, of *Les Misérables*, by many considered the best of Hugo's fiction, and in 1865 by *The Man Who Laughs.* During his after-life he wrote poems, plays, novels and pamphlets, in many far outstripping all previous flights of imagination, portraying characters, extreme, sublime and ridiculous. He is acknowledged as the most wonderful manipulator of the language that ever graced the history of French literature. Hugo took a leading part in the French politics of his time, exiling himself while Napoleon III was emperor and, after his return in 1870, sitting in the constituent assembly, and in 1876 was made a senator. He was a greater novelist than a dramatist and a greater poet than a novelist. The range and capacity of his genius in rhythm and rime have not their equal in French literature. It is said of him: "He found French poetry a piece of brick and stucco, and left it a palace builded of jewels — a palace of the Arabian Nights." Hugo died at Paris, May 22, 1885.

Huguenots (*hū'gē-nŏts*), the name formerly applied to the adherents of the Reformation in France. In the time of Calvin (about 1525) many of the noble and middle classes joined the movement; but Francis I, being opposed to it, caused many to be burned as heretics. When Henry II of France joined the Protestants (1547-59), it gave the Reformation a great impetus; but it was stopped by the ascendency at court of the family of Guise. Under Francis II a chamber for the punishment of Protestants was established in each parliament, and executions, confiscations and banishments were common. The Protestants took up arms, appointing Louis I, prince of Bourbon-Condé, their leader, and on Feb. 1, 1560, at Nantes, petitioned the king for freedom of religion and the removal of the Guises. In the event of refusal, they were to seize the king and proclaim Condé governor-general. The king, being warned, fled to Amboise, where some bands of Protestants bearing arms afterward appeared, but were taken prisoners and 1,200 of them executed. When Charles IX, not yet of age, ascended the throne, his mother, Catherine de Medici, removed the Guises and was compelled to seek the support of the Protestants against them, and in July, 1561, there appeared an edict exempting the Huguenots from the penalty of death, and in 1562 another, giving noblemen the right of free exercise of religious worship on their own estates. The Guises then imprisoned the king and Catherine. The duke of Guise defeated the Protestants at Dreux and marched upon Condé at Orleans, but was assassinated in camp on Feb. 18, 1563. Then Catherine concluded the peace of Amboise, allowing free religion, except in certain districts; but, becoming allied with the Spaniards, she attempted the lives of Condé and Coligni and executed over 3,000 Huguenots. On March 13, 1569, Condé was killed at the battle of Jarnac.

Catherine, failing to suppress the Protestants by fair means, brought about the massacre of St. Bartholomew in 1572, wherein in two months over 30,000 were slain in Paris and the provinces. After the peace of Beaulieu Guise organized a Catholic association called the Holy League, at the head of which the king placed himself, and the sixth religious war began. Peace was again concluded in 1577, but on account of a violation of the terms of the treaty by the court, war was again commenced, only to be ended in 1580.

Until 1584 there was comparative quiet, but when Henry of Navarre became heir on the death of Anjou, Guise revived the League, and the "war of the three Henries" began. This was marked by the assassination of Guise and his brother, the Cardinal of Lorraine, and of the king himself. Then Henry of Navarre, ascending the throne, signed the famous Edict of Nantes, giving freedom of worship to the Protestants, April 13, 1598.

Until 1615 there was quiet, but then Condé again declared a revolution, ended by the treaty of Loudun the next year, only to be violated by the court in 1617; and after the surrender at Montpellier, Oct. 21, 1622, a partial confirmation of the Edict of Nantes was obtained. The court paid little attention to the treaty. So the duke of Rohan and Prince Soubise, at the head of the Protestants, attempted to regain their lost rights, but after defeating the royal navy several times were defeated by Cardinal Richelieu, who captured the Huguenot stronghold of Rochelle (1628). Louis XIV, abetted by Madame de Maintenon and the Jesuit father, Lachaise, then began a persecution, causing hundreds of thousands to flee to Switzerland, Holland, England and Germany. On Oct. 23, 1685, Louis revoked the Edict of Nantes. Then followed still more fearful persecutions. Many fled to the mountains of Cevennes, where they kept up a successful resistance until 1706, when the rebellion was suppressed with great cruelty. It was not until 1789-90 that they were restored to their civil and political rights by the national assembly under Louis XVI. From 1685 onward thousands of Huguenots entered England and supported William of Orange. See Baird's *Rise of the Huguenots* and *Huguenot Emigration to America.*

Huguenots, Les. Opera in five acts; words by Scribe and Deschamps, music by Meyerbeer. First produced in Paris in 1836. The drama deals with one of the most dramatic periods in French history — the 16th century. Its musical treatment by Meyerbeer was on a scale of magnificence and splendor previously unattempted. Its great length makes curtailment necessary on ordinary presentations, but it has continued to be the most popular of the productions of Meyerbeer's best period, notwithstanding the unfavorable criticisms of Schumann, Wagner and others. The German choral, *Ein feste Burg*, is introduced effectively in the first and last acts.

Hull, a city in Quebec opposite Ottawa, across Ottawa River, is a center of the lumbering trade, and has extensive sawmills, pulpmills and woodware and match factories. Population 14,000.

Hull or **Kingston-on-Hull,** an important English river-port, is in Yorkshire on the north bank of the Humber, where it is joined by the Hull. The docks and basins comprise an area of over 250 acres, the largest being the Alexandra, Albert and Victoria docks. It is the outlet for the manufactures of the interior, but also carries on an extensive manufacture of ropes, canvas, chain and machinery, and supports many mills. Among its old and notable buildings are Holy Trinity, St Mary's Lowgate (1333), Hull College, Hull Grammar School (1486), Trinity House and the town hall. Hull was made a free borough by Edward I in 1299. In 1642 the refusal of the governor to admit Charles marked the outbreak of the Civil War, and caused it to be twice besieged by the Royalists. Hull is the third largest port in Britain and has a population of 278,024. See Freeman's *English Towns.*

Hull, Isaac, naval officer and nephew of William Hull, was born at Derby, Conn., March 9, 1773. At 14 he became a cabin-boy, then commanded a ship in the West Indian trade, and in 1798 entered the American navy as fourth-lieutenant. He was assigned to the frigate *Constitution*, and commanded it as captain after 1806. He was an able seaman, and in July, 1812, escaped from the English squadron, afterwards, on August 19, capturing the British ship *Guerriere* of 44 guns, injuring her so that she had to be burned. After this, Hull's frigate was called *Old Ironsides.* Hull afterwards commanded squadrons in the Pacific and in the Mediterranean, retired in 1841, and died at Philadelphia on Feb. 13, 1843. See his *Life* by Gen. James Grant Wilson.

Hull, William, American general, was born at Derby, Conn., in 1753; fought in the Revolutionary War; and was governor of Michigan Territory during 1805-12. He was hurriedly sent at the head of a poorly-conditioned army of 1,500 men to defend Detroit from the British in 1812. He was compelled to surrender, and, to shield the government, he was tried by court-martial and sentenced to be shot. But the sentence was never carried out, and he died on his farm, in Massachusetts, Nov. 29, 1825.

Hum'bert I, second king of Italy, was born on March 14, 1844. He commanded a division in the war with Austria in 1866, taking part in the battle of Custozza. He married his cousin, Princess Marguerite of Savoy, in 1868, and succeeded his father, Victor Emmanual II, as king of Italy in 1878. An attempt was made to assassinate him in the first year of his reign. His changing the death-sentence of the would-be assassin to imprisonment at hard labor and his frequently exposing himself to cholera while relieving the suffering of the sick and dying, when this scourge was raging at Naples, made him most popular with his subjects. At Monza, near Milan, on

July 29, 1900, King Humbert was assasinated by an Italian anarchist. He was succeeded by his son, Victor Emmanuel III.

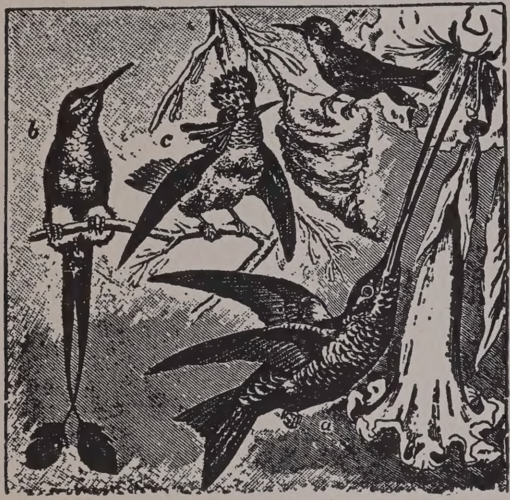
Humboldt (*hŭm'bōlt*), **Friedrich Heinrich Alexander, Baron von,** one of the greatest of naturalists, was born at Berlin on Sept. 14, 1769. He studied at the universities of Frankfort, Berlin and Göttingen. He next entered the Mining Academy at Freiberg, and afterward held an office in the mining department. He had already made scientific tours along the Rhine, in England, France, Belgium and Holland, and now the desire to see tropical countries led to his giving up his office. But before he started, three months at Jena gave him the friendship of Goethe and Schiller and a short stay at Paris that of Bonpland, who became his fellow-traveler. He set sail in June, 1799, and spent five years in exploring what now are Venezuela, Colombia, Ecuador, Peru and Mexico, which he crossed from east to west. Twenty years were spent in preparing the notes taken on his American journey for his great book, *Journey to the Equinoctial Regions of the New Continent.* In 1829 Humboldt again became a traveler, accompanying an expedition sent by Emperor Nicholas to the north of Asia to explore the Ural and Altai Mountains, Chinese Szungaria and the Caspian Sea. The entire journey lasted nine months, and extended to 2,320 miles. It is described in Humboldt's *Central Asia.* In 1830 he was sent to Paris to carry the king of Prussia's recognition of Louis Phillippe, and for the next 12 years was employed on similar political missions. In 1835 was brought out his *Examination of the Geography of the New Continent.* His last great work, *Cosmos*, is one of the greatest scientific works ever published. Humboldt's gifts to science are large and varied — on the geography of Spanish America, meteorology, magnetism, climate, electricity, the breathing of fishes and crocodiles etc. See Lord Houghton's *Monograph.* He died at Berlin May 6, 1859.

Humboldt, Karl Wilhelm von, the older brother of Alexander, was born at Potsdam, Prussia, in June, 1767. He was educated at Frankfort, Berlin and Göttingen. He entered the government service, becoming counselor of legation. For awhile he lived at Jena, where he became a close friend of Schiller, his correspondence with whom is well-known. In 1801 he became Prussian minister at Rome. From Rome he returned to Berlin to fill the high place of first minister of public instruction, and it was owing to him that Berlin University, now the first in Germany, was founded. In 1810 he became ambassador to Austria His *Æsthetic Essays* were justly celebrated. He, however, is most famous for his studies in language. He was the first scientifically to study the Basque tongue, spent much labor on the languages of the east and on eastern literature, and carefully studied the languages of the South Sea islands. His essay *On the Variety of Structure in Human Speech* marks a new era in the study of language. *Letters to a Female Friend* show him to have been a most pure and amiable man. He died near Berlin, April 8, 1835.

Humboldt River, Nevada, is the longest river in that state, having a course of 350 miles. It flows into a lake having no outlet, Humboldt Lake. Along this stream runs the course of the Central Pacific Railroad. This stream is but small, and is saline and alkaline in its qualities; while its banks are in general clad only with sagebrush, though willows and other vegetation occasionally appear. The course of the river indicates the most practicable pass through the Nevada ranges; but even Lake Humboldt is nearly 4,000 feet above the level of the sea.

Hume, David, philosopher and historian, was born at Edinburgh, April 26, 1711. His father was a Scottish laird, but David was a younger son and had to make his own fortune. He was educated at Edinburgh and, as his father wished him to study law, he did so, but gave it up to try business life at Bristol, which he found just as little to his taste. He now became a student, with no settled plan of work. In 1739 appeared the first two books of his *Treatise of Human Nature*, better known by its later title, *An Inquiry Concerning the Human Understanding*, the germ of his philosophy. This book marks a new era in philosophy, yet it was little noticed at the time. In 1751 he brought out his *Inquiry into the Principles of Morals*, a work of great force. His *Political Discourses*, written in the following year, laid the foundation of free trade, though the doctrine was more fully worked out by Adam Smith. His appointment as keeper of the Advocate's Library in Edinburgh, with a small salary, surrounded him with books and put it into his head to write a history of England. The first volume, covering the reigns of James I and Charles I, came out in 1754. He carried it on to the Revolution (1688), and then wrote backward through the Tudors to the Roman conquest. Hume's *History of England* is not a fair and careful record of facts; but for many years it was the standard work, and still is one of the most interesting to read. In 1763 Hume went to Paris as ambassador's secretary. His last and highest office was under-secretary of state for the home department. Hume died at Edinburgh, Aug. 25, 1776. See Huxley's *Hume* in the English Men of Letters Series and Leslie Stephens' *English Thought in the Eighteenth Century.*

Humming Birds, small birds with narrow, pointed wings, often seen hovering over flowers. In this position their wings vibrate so fast that they make a humming sound. These birds are confined solely to the New World. Although there are about 500 species, there is only one found in the United States east of the Mississippi. Nevertheless, this single species — the ruby-throated humming bird — is widely known to residents of the United States. Other kinds live west of the Mississippi, and in all North America there are about 15 species. The greatest variety live in Central and South America and in the West Indies. The humming birds are related to the swifts. Besides their long wings, already mentioned, they have long slender bills of different forms — straight in some cases, in others curved and splendidly adapted to the form of the flowers which they visit. It was formerly supposed that they fed only upon the nectar of flowers, but they also eat insects. Some of them are captured while on the wing, and others are obtained from the flowers which they frequent. They have weak feet and are much on the wing. Some of them are somber in color, but the majority have a brilliant plumage which shows a metallic reflection, changing according to the angle at which it is seen. Their nests are small, beautifully made structures. Often they are covered with lichens and resemble a knot on the limb. The young are fed through the bill, food being injected through it, as through a syringe, into the mouth of the young bird. The ruby-throated humming bird is migratory, and arrives from the south about the first of May. It frequents flowers with a spreading corolla, like the trumpet flower and the morning glory. It is not timid, and can be tamed to eat sweets from the hand. Its only note is a squeak, but some of the tropical species are good singers. The sun-birds of Africa, India, the neighboring islands and northern Australia are often confused in the popular mind with humming birds. They are small birds of brilliant plumage, often with a metallic luster, but belong to quite a different family.



HUMMING BIRD.

(a) Sword-bill Humming Bird. (b) White-booted Racket-tail. (c) (ć) Male and Female Tufted Coquette.

Hum′phreys, Andrew Atkinson, an American soldier, was born at Philadelphia, Nov. 2, 1810, graduated at West Point in 1831, and was made first lieutenant in the topographical engineers. He had charge of the Coast Survey from 1845 to 1849 and, later, of the topographic and hydrographic survey of the Mississippi delta. He served through the Civil War, advancing to the rank of major-general of volunteers, taking part in the battles of Fredericksburg, Chancellorsville and Gettysburg, the siege and overthrow of Petersburg and the pursuit and surrender of Lee's army. In 1866 he was made chief of engineers, with the rank of brigadier-general. He was retired in 1879, and died at Washington, D. C., Dec. 27, 1883.

Hu′mus, the fine soil resulting from the decay of organic material. Its value lies less in the mineral matters it returns to the earth than in the change it produces in the texture of the soil. Its addition to stiff soils mellows them and gives them a better water capacity. See, also, SOILS and MANURES.

Hun′dred Years' War. The name given to the long series of contests between England and France for the possession of the French crown and French territory, lasting from 1337 more or less intermittently till 1453. For history of this period see ENGLAND and FRANCE. See, also, Green's *Short History of the English People.*

Hungary (*hung′ga-ri*) became an independent nation following the World War and the partition of the Austro-Hungarian empire. But Hungary had originally been a kingdom of its own before it was united with Austria, and size to-day is less than when it was formerly a sovereign government. The Kingdom of Hungary within the Austro-Hungarian empire comprised an area of 125,000 square miles, and included Transylvania, Slavonia, and Croatia. Thus it composed over half of Austria-Hungary. Its population was 21,000,000. Its king was the emperor of the empire.

When Charles I was deposed in 1918, Hungary became a republic and Count Michael Karolyi, a landed gentleman with republican principles, was chosen provisional president. A year of suffering followed, as an aftermath of the war. Bela Kun, a Hungarian working under the direction of Lenine, premier of Soviet Russia, was able to gather a large following, overthrow Karolyi, and establish bolshevism. A rule of terror followed, culminating in the overthrow of Bela Kun, and the establishment of a regency. Admiral von Hrothy was elected regent March 1, 1920.

The World War dealt severely with Hungary. By the treaty of Trianon of June 4, 1920 Hungary lost Transylvania to Rumania, and Croatia and Slavonia to Yugo-slavia. Its population was thus reduced to 9,000,000 and its area to 35,654 square miles, slightly less than the area of Indiana. Of the former 28,000,000 domestic animals only 6,000,000 were left. The people call themselves Magyars, pronounced *mud'yärs.*

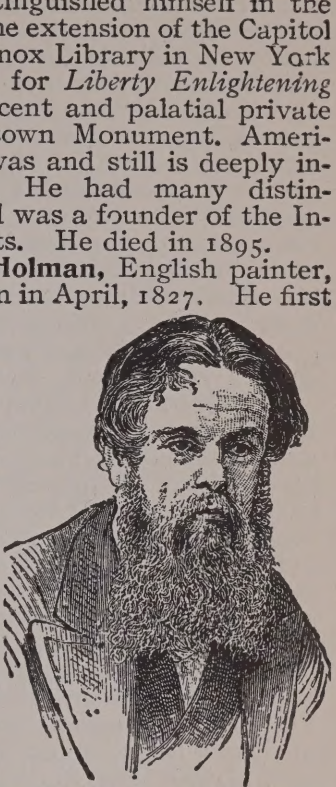
Huns, a wandering race of early times, whose ancestors were probably the Hiung-nu, a people of Turkish stock, who formed a powerful state in Mongolia in the second century B.C. The tribesmen afterward scattered, and one part settled in the Ural and Volga Rivers, in Russia. About 372 A.D. they migrated southeastward, conquering the Alani between the Volga and the Don Rivers, the Ostrogoths, and the Visigoths, driving the latter across to the southern banks of the Danube. The Huns now occupied all the territory north of the Danube which the Goths had formerly owned. In 430 a second wave of the Huns, under Rugulas, pressed southward. Theodosius II, emperor of Byzantium, paid him tribute to keep him from attacking. In 433 the nephew of Rugulas, Attila (whom see) came to the kingship of the Huns. He marched against Theodosius, conquered him, laying waste to Thrace, Greece, and Macedonia. He then marched west, crossed the Rhine and Seine Rivers, but was held in check by the Romans in the battle of Chalons (451), when the Franks and Visigoths joined the Romans to stem the great rush of the Huns. The next year he overran Italy. Attila's death in 453 marked the end of the power of the Huns; the tribe soon was dispersed.

Hunt, Helen ("H. H.") See JACKSON, MRS. WILLIAM S.

Hunt, James Henry Leigh, English poet and essayist, was born at Southgate, close to London, Oct. 19, 1784. Hunt spent eight years at Christ's Hospital School in London. After some time as lawyer's clerk for one brother and four years in the war office with another brother, he set up a newspaper, *The Examiner,* in 1809. On Shelley's invitation to help him and Byron to found a quarterly magazine, *The Liberal,* he set sail for Leghorn in 1821, but arrived only a week before Shelley's death. *The Liberal* lived only for four issues, and soon Hunt was back in England. The remainder of his life was one of never-ending activity and never-ending money troubles, for, as he said, "he never knew his multiplication table." The critics called Hunt and Keats the Cockney poets. Leigh Hunt's poetry is now little read, but is witty and clever. His translations are among the choicest of their kind. Among his writings are *The Story of Rimini, The Palfrey, Lord Byron and His Contemporaries, Imagination and Fancy, The Old Court Suburb.* He died on Aug. 28, 1859. See his *Autobiography* and *Leigh Hunt* by Professor Dowden in Ward's *English Poets.*

Hunt, Richard Morris, an American architect, brother of William Morris Hunt, was born in 1828. At an early age he studied and traveled in Europe, Egypt and Asia Minor, afterward working on the buildings that connect the Louvre and the Tuileries. After 1855 he distinguished himself in the United States by the extension of the Capitol at Washington, Lenox Library in New York City, the pedestal for *Liberty Enlightening the World,* magnificent and palatial private houses and Yorktown Monument. American architecture was and still is deeply influenced by him. He had many distinguished pupils, and was a founder of the Institute of Architects. He died in 1895.

Hunt, William Holman, English painter, was born at London in April, 1827. He first tried business life, but in 1845 became an art-student at the Royal Academy. In 1848 Hunt shared his studio with Dante Gabriel Rossetti; and the two, with Millais and other young painters, started the pre-Raphaelite Brotherhood, whose members aimed at truth to nature in their work. *Our English Coasts, The Light of the World* and *The Awakened Conscience* are some of the pictures painted in this part of his life. In 1854 Hunt set out for Palestine to study eastern life and the local coloring and surroundings of Bible story. As a result of several visits he painted *The Scapegoat, The Shadow of Death, The Triumph of the Innocents* and *The Finding of Christ in the Temple.* His *Afterglow in Egypt* has been called "that modern masterpiece of technical art," and *Isabella* is his finest work in respect of coloring He died Sept. 7, 1910.



W. HOLMAN HUNT

Hunt, William Morris, an American artist, was born in 1829 in Vermont, and became the one important figure-painter among the American artists of his time. He studied at Duesseldorf and with Couture and Millet, bringing the latter's influence into American art. He always was a forceful technician, and many of his smaller pictures have great charm, fine color and masterly execution. His chief works include *The Prodigal Son, A Peasant of Brittany, Portrait of Chief-Justice Waite, Seacoast at Magnolia* and, above all, the mural decorations in the Capitol at Albany. His portraits are exceptionally expressive of character; his landscapes large in style and vigorously executed; his wall-pictures the first large ones painted by an American that possessed artistic importance. The Capitol's new ceilings and walls conceal them. The artist died in 1879, about a year after painting them.

Hun'ter, David, was born at Washington, D. C., July 21, 1802. He graduated from West Point in 1822. Entering the army, he became captain of dragoons, and left the service in 1836. But he re-entered the army as paymaster in 1842 At the breaking out of the Civil War, Hunter was made colonel of the 6th United States cavalry. He commanded a division at Bull Run and was wounded. In 1862 he was in command of the department of the south and abolished slavery in his department; but this order was countermanded by President Lincoln. Hunter defeated a Confederate force at Piedmont on June 5, 1864. He died at Washington, D. C., Feb. 2, 1886.

Hunter, John (1728–93), a distinguished Scotch anatomist and surgeon from whom is named the great Hunterian Museum in London. He did important work in comparative anatomy, and is one of the fathers of zoological science. His brother William (1718–83), famous as a surgeon, founded the Hunterian Museum at Glasgow University.

Hun'tington, Ind., city and county-seat of Huntington County, is on Little River, about 20 miles southwest of Fort Wayne. The city has excellent waterpower, and manufactures boots, shoes, barrels, plows, bicycles, pianos, lime, and cement, and, besides, has foundries and woodworking factories. The city has a trade in coal and lime, because of the coalfields and limekilns near by, and also in agricultural products. Located here is United Brethren College. The city has a public library, owns and operates its water and lighting plants, and is served by the Chicago and Erie and Wabash railways. Population 20,000

Huntington, W. Va., the capital of Cabell County, on the Ohio River, founded in 1871, and named after the late C. P. Huntington, then president of the Southern Pacific Railroad. It lies 50 miles west of Charleston, the state capital, in a picturesque agricultural region, reached by the Chesapeake and Ohio, Guyandotte Valley and Ohio River railroads. Here is the seat of Marshall College (the state normal school), Douglas High School (for colored youth) and the West Virginia Asylum for incurables. Huntington has an excellent public-school system, its high school giving a four years' course. It is the shipping point for a large trade in coal, iron and lumber; its industrial establishments include railway, machine and car shops, saw and planing mills, manufactories of glass, stoves, bricks, woodwork, paints etc. The city is beautifully laid out, and has a population of 75,000

Hunts'ville, Ala., a city and county-seat of Madison County, 96 miles from Birmingham. It is in the center of a fine agricultural, cotton, fruit and stock raising region, known as the Tennessee Valley. It has great importance as a manufacturing city in the south, and is second only to Lowell, Mass., in cotton manufacturing, having nine mills with a combined annual output of $4,775,000. Besides these, Huntsville has cottonseedoil mills, planingmills, heading, fibre, spoke and handle factories, machine shops, foundries and brick plants.

Huntsville has a number of private schools, a public-school system and, close to the city, the Agricultural and Mechanical College for Negroes. It has all the adjuncts of a progressive city, and owns and operates its waterworks. Water is supplied from a spring having a daily capacity of 2,400,000 gallons. This "Big Spring" attracted the city's first settler, John Hunt, a Virginian soldier of the Revolution. He built his cabin here in 1805, and brought his family from Tennessee in 1806. The settlement was incorporated in 1811 as Huntsville. It is served by the Nashville, C. and St. L. and Southern railways. Population, 12,000.

Hunyady (*hoon'yŏd-ē*), **Janos.** John Corvinus Hunyady, governor of Hungary, one of the greatest war-captains of his age, was born near the end of the 14th century. His life was one unbroken crusade against the Turks. From 1437 to 1456 he was the shield of Hungary, not only against foreign foes, but against the lawlessness of the nobles at home. In 1442 he drove the Turks out of Transylvania, followed by a brilliant campaign south of the Danube in the next year; but his greatest exploit was the storming of Belgrade in 1456. Hunyady was governor of the kingdom from 1445 to 1453, and the royal line was wholly displaced when his son Matthias came to the throne He died on Aug. 11, 1456.

Hu'ron, Lake, the second largest of the five Great Lakes, on the frontier between the United States and Canada, is joined to Lake Superior by St. Mary's River and to Lake Michigan by the Strait of Mackinaw. The lake is divided into two unequal parts by Cabot's Head Peninsula and Grand Manitoulin Island, the parts to the north being called North Channel and Georgian Bay Its greatest length is 263 miles and greatest breadth — without Georgian Bay — 105 miles. Its greatest depth is 750 feet, and it is 581 feet above sealevel. It often has violent storms, like the other Great Lakes There are about 3,000 islands in the lake The water is very clear and pure, and fish are abundant. Good harbors are plentiful, and at Sand Beach, Mich., there is a harbor of refuge. See Crossman's *Chart of the Great Lakes.*

Hurons, a once-powerful tribe of American Indians belonging to the great Huron-Iroquois family. Their home was near Georgian Bay, Lake Huron. Their own story of their origin was that a woman fell from heaven into the ocean Then the tortoise and the beaver dived, and brought up earth to make land, where she rested and bore two sons. The son of one of these twins, called Tharonhiawagon, was worshiped by the Hurons and the Iroquois. The tribe was divided into clans, each ruled by a sachem. Their totem was the porcupine. For an Indian tribe their country was very small, only about 75 miles long and 25 miles wide. When first met with by the French, they were 30,000 strong, living in 25 towns. In 1609 the French, under Champlain, found the Hurons allied with the Algonquins and fighting the Iroquois By 1648 the Hurons were so weakened by disease that they fell an easy prey to the Iroquois, who had been given guns by the Dutch Their towns destroyed, the Hurons scattered, some joining the Iroquois, others carried by the French to Quebec. See Kip's *Early Jesuit Missions in North America* and Chamberlain's *Ethnology of the Aborigines* in the British Association's *Handbook of Canada.*

Hurst, John Fletcher, an American divine, and bishop in the Methodist Episcopal church He was born near Salem, Md., Aug. 17, 1834, and studied theology at Halle and Heidelberg, Germany. He returned to the United States in 1856, and became pastor of various churches until 1866, when he was given charge of the Methodist Missionary Institute at Bremen, Germany. He remained there for three years, and in 1871 again returned to the United States, and was made professor of historical theology at Drew Seminary, Madison, N. J., becoming president in 1873. In 1880 he was elected bishop. In 1891 he became chancellor of the American University (Meth.) at Washington, D. C. He was the author of *History of Rationalism; Life and Literature in the Fatherland; Bibliotheca Theologica; Short History of the Reformation; Indika;* and *History of the Christian Church.* He died on May 4, 1903.

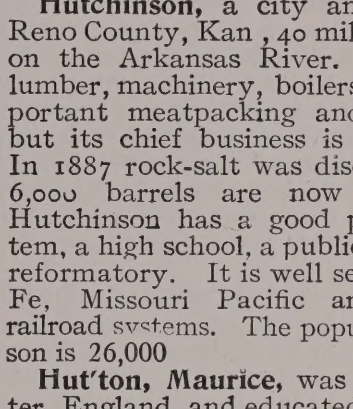
Huss or **Hus, John,** a Bohemian reformer, was probably born in 1369. At the University of Prague he became acquainted with the writings of Wiclif, an English reformer, and in 1408 preached against the abuses of the clergy. His preaching won the people, and nothing stopped him, not even excommunication in 1410. Next year he spoke still more boldly, but nearly all the nobles stood by him. He was later summoned to a church-council at Constance, was imprisoned there in spite of having been promised protection, and in 1415 was illegally tried and condemned. He remained loyal to his evangelical beliefs, and so was burned to death as a heretic on July 6, 1415. His followers held together, finally forming the Unity of Brethren that is commonly called the Moravian (or Bohemian) Brethren, and a century later, when Luther arose, they were a large and powerful body of Evangelical Christians. The writings of Huss, which are Wiclif's, greatly influenced Luther.

Hutch'inson, Anne, a religious leader was born in Lincolnshire, England, about 1590, and murdered by the Indians in Connecticut in 1643 At first her zeal in religious matters met with some sympathy from the Rev. John Cotton, but after a time the famous minister came to dread her leanings to the antinomian heresy, and in 1637 she was excommunicated from his church. Anne Hutchinson and her friends, by permission of the Indians, founded a settlement in Rhode Island, where all differences of religious opinion were to be tolerated. Only after her husband's death did she remove to Stamford, Conn., where she and her family, except one daughter, were massacred. See *Life* in *Library of American Biography.*

Hutchinson, a city and county-seat of Reno County, Kan., 40 miles west of Wichita on the Arkansas River. It manufactures lumber, machinery, boilers etc. It is an important meatpacking and shipping point, but its chief business is the salt industry In 1887 rock-salt was discovered here, and 6,000 barrels are now produced daily Hutchinson has a good public school system, a high school, a public library, the state reformatory. It is well served by the Santa Fe, Missouri Pacific and Rock Island railroad systems. The population of Hutchinson is 26,000

Hut'ton, Maurice, was born in Manchester, England, and educated at Magdalen College School and Worcester College, Oxford. Fellow of Merton College, 1877–80, he lectured on classics and ancient history at Firth College in 1880. He has been professor of Greek since 1887, and principal since 1901, of University College, Toronto.

Hux'ley, Thomas Henry, was born at Ealing, Middlesex, England, May 4, 1825. He studied at the medical school of Charing Cross Hospital. After receiving his degree in 1846, he entered the medical service of the royal navy as assistant surgeon of the *Rattlesnake.* The staff of this ship surveyed the passage within the great barrier reef skirting the eastern shores of Australia, and explored the sea between the northern end of that reef and New Guinea. Huxley plunged eagerly into the study of the many sea-animals gathered during the survey, and made them the subjects of valuable scientific papers, the most important being *The Oceanic Hydrozoa,* which was not published until 1859. In 1854 he was made pro-



T. H. HUXLEY.

fessor of natural history in the Royal School of Mines, London, and held that position till 1885. He was the first great teacher of biology by the laboratory method. With his assistant, Dr. Newell Martin, he published, in 1874, the famous *Practical Biology*, which was the means of introducing laboratory work in that department into the United States and some other countries. He was also interested in general education, and served a term as member of the London school board. He was the best popular exponent of science that the world has known, and in other respects a man of commanding intellectual power. He defended and explained Darwin's hypothesis of evolution with telling effect. Perhaps his greatest service was in promoting the advance toward intellectual honesty. Many of his works, like *The Physical Basis of Life*, *Lay Sermons*, *Man's Place in Nature*, *Critiques and Addresses* and *Science and Culture* are famous, and his controversial writings are also well known. His scientific researches fill four large octavo volumes, and his collected essays and books of a less technical character were published in 1892 in nine volumes. He died at Eastbourne, June 29, 1895. See *Life and Letters* by his son.

Huygens (*hoi'gĕns* or *hī'gĕnz*), **Christian,** "the Dutch Archimedes," was born at The Hague in 1629, and died there in 1695. A splendid ancestry, three years of university training and much travel combined to give him a liberal education. Most of his life was spent in Holland, but for 15 years following 1666 he worked in Paris under the patronage of Louis XIV and the French Academy of Sciences. His mathematical discoveries are important, but his chief distinction lies in the domain of physics, where he gave a general solution of the problem of the compound pendulum; invented the pendulum clock and applied it to the measurement of the acceleration of gravity at various parts of the earth's surface; discovered the laws governing the collision of bodies and centrifugal forces; suggested the wave-theory of light and applied it to the explanation of reflection, ordinary refraction and double refraction; and constructed the first powerful telescope of the refracting kind, discovered the rings of Saturn and its sixth satellite and improved the method of grinding and mounting lenses. All his work is characterized by practicability, clearness and elegance. A complete edition of his works has been (1888) published at The Hague.

Hy'acinth, the species of *Hyacinthus*, a genus of the lily family, containing about 30 species, most of which are natives of South Africa. The common hyacinth (*H. orientalis*) is native to Syria, Asia Minor and Greece. It has long been cultivated and occurs in many varieties. Though a harbinger of spring, it is more of a hot-house than garden-flower

Hy'acinthe, Pére (*par ĕ'ă'sănt'*), was the former monastic name of Charles Loyson who was born at Orléans, France, March 10. 1827. He studied at St. Sulpice, and in 1851, becoming a priest, he taught philosophy and theology at Avignon and at Nantes. Afterwards he became a Carmelite, came into notice as a powerful preacher, and gathered crowds from all ranks of society to hear him at the Madeleine and at Notre Dame in Paris. He was "silenced" because of unorthodox utterances; but, persisting in his course, he was excommunicated in 1869. One of the changes which he urged was that priests should be allowed to marry, and in 1872 he married an American woman. He died in Paris, Feb. 9, 1912.

Hyderabad (*hī'dẽr-ȧ-bäd'*) or **Haidar'abad,** capital of the Indian feudatory or native state, under British administration, of the same name, stands on the River Musi, 1,700 feet above the sea. It is one of the most important Mohammedan strongholds in India, and has many mosques. Wild and picturesque scenery surrounds the town, and the neighborhood is laid out in beautiful gardens and huge parks. Area of the state 82,698 square miles; population 13,374,676; population of the city, with suburbs, 500,623.

Hyder Ali (*hī'der ä'lē*), ruler of Mysore and one of the greatest Mohammedan princes of India, was born in 1728. In 1749 his bravery at a siege brought him to the notice of one of the ministers of the maharajah. He soon became, in all but name, ruler of the kingdom. He conquered many adjoining states, and in 1766 ruled over 84,000 square miles. When, in 1772, he was attacked by the Mahrattas, he claimed English help, in accordance with the treaty in force between them. This was refused, and he became the bitter enemy of the British. When, in 1778, the English were at war with the French, he and his son, Tippoo Sahib, descended on them like a thunderbolt, wholly routed two commanders, and ravaged the country to within 40 miles of Madras. He was at last defeated in three battles by Sir Eyre Coote. He died in December, 1782.

Hyde Park, a famous London Park which covers, in the district of Westminster, 400 acres, reaching from the western end of London to Kensington Gardens. It was once part of the manor of Hyde, which belonged to Westminster Abbey. When the monasteries were dissolved under Henry VIII, these grounds came into possession of the crown, and in the reign of Charles II were (and remain) the great drive and walk of London.

Hyde Park, Mass., town in Norfolk County, on Neponset River, about four miles from Boston. It manufactures paper, morocco, cotton and woolen goods, dyestuffs, looms, curled hair, chemicals and machinery. The town is a residential suburb, has good schools and a free library, and is served by the N. Y. N. H. and H. Railroad. It was incorporated in 1868. Population 15,507.

Hy'dra, a small fresh-water animal of low grade of organization. It has a tubular body, about the size of a knitting needle and from one quarter to five eighths of an inch long. This is capable of being extended and contracted into almost a globular form. One end of the body is attached, and the other is developed into a circular disc surrounded by a circlet of six or eight tentacles. In the middle of the disc is a mouth which leads into a general cavity or stomach. The body, therefore, is a hollow tube. It is composed of two cell-layers, an outer and inner layer (*ectoderm* and *endoderm*). A thin supporting layer is formed between the two, which foreshadows the middle layer (*mesoderm*) found in connection with the others in all higher animals. The hydra has two cell-layers, but the bodies of all higher animals have three cell-layers. (See DEVELOPMENT.) Hydræ live singly, and propagate both by budding and by eggs. The budding is very interesting. When they are well-fed, a bud will start from the parent forms which soon develop into tubular bodies. Later, discs and tentacles are added. The buds are usually set free after the development of a mouth, but sometimes a second bud (or more) will start and reach the feeding condition before any are set free. In many marine animals (*hydrozoa*) a similar process of budding occurs, and the new forms produced all remain together permanently. The entire group grows, and budding continues until branching colonies of considerable extent are produced. See CORAL and HYDROZOA.

Hydrau'lic En'gines or **Mo'tors,** are often used where water can be got under high pressure. They do not differ essentially from steam engines (which see). The water acts by difference of pressure — that is, it is let in at a high pressure at the beginning of the stroke, and let out at a low pressure at the end of the stroke, thus giving a back-and-forth motion to the piston. The speed of the piston has to be kept low to avoid hurtful shocks in suddenly bringing the column of water to rest. Since hydraulic engines work under very much greater pressures than steam engines — usual pressure 700 pounds per square inch — they can be much smaller. A common form is the three-cylinder, single-acting engine. In each cylinder works a plunger; water is let in by valves behind the plungers, and forces them out. At the end of the out-stroke, the water pressure is cut off, and the exhaust valve opened, allowing the plunger to push the water out of the cylinder on the return stroke, and so on.

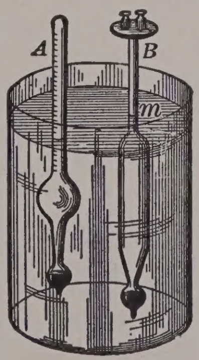
Hy'drau'lics, the science which treats of the flow of water. It is partly theoretical, based on the general laws of fluid motions as developed in physics, but largely experimental. It has to do with the flow of water through orifices, pipes and canals and over weirs and dams and with the use of rivers and streams for power purposes. (See WATER-WHEELS.) The designing of canals, aqueducts and pipe-lines for drainage and public water-works is an important application of the science of hydraulics.

Hy'drochlo'ric Acid. See ACID.

Hy'drocyan'ic Acid. See ACID.

Hy'drogen, one of the elements and the lightest gas known. It is colorless, odorless, and not poisonous. It burns with a non-luminous flame, which produces great heat and forms water. At a very low temperature it can be changed to a liquid and, finally, to a transparent solid. Liquid and solid hydrogen are only about one fourteenth as heavy as water, and in these conditions also hydrogen is the lightest known substance. Combined with oxygen, it forms one ninth part by weight of water, and it plays a most important part in the makeup of tissues of animals and plants. It also is in a large number of manufactured substances and products, as starch, sugar, vinegar, gutta-percha, alcohol, ether, benzine, aniline, indigo, morphia etc. In fact, it is a constituent of practically all organic substances. It is not found largely in a free state, but in some places it comes out of the earth with other gases in natural gas, as in the petroleum regions of Pennsylvania. It is usually prepared by the action of acids on metallic zinc or iron. As it is the lightest gas known, it is used as a standard to measure the densities of other gases. The air of the atmosphere, for example, is 14.5 as compared with hydrogen as 1; moreover, as the weight of an atom of hydrogen is less than that of an atom of any other element, the atomic weight of hydrogen is taken as a measure, and those of other elements referred to it. Compounds containing hydrogen and one other element are products of decaying vegetable and animal matters, as marsh gas, ammonia and hydrogen sulphide.

Hydrom'eter, an instrument employed in science and commerce to determine the densities of bodies. It consists essentially of a slender floating body, heavily ballasted at the lower end. There are two principal forms. The simpler form is made of glass, the lower end being provided with a bulb partly filled with mercury as ballast, the upper end being a hollow graduated stem. This form is marked *A* in the accompanying figure. The depth to which the stem sinks evidently depends upon the density of the liquid in which it is



HYDROMETER.

placed. By placing the hydrometer in liquids of known densities it may be graduated empirically; and may henceforth be used to measure the unknown density of a liquid. The distinguishing feature of this form of hydrometer is that *the weight of liquid displaced is a constant.* The second form, which is generally ascribed to Nicholson but is really due to Robert Boyle (1675), is a floating body provided with a fiducial mark. The density of any liquid is determined by the weight which must be placed upon the hydrometer to sink it to the fiducial mark in this particular liquid. [A fiducial line or point is a line or point of reference, as for setting a scale used for measurements.] This form of hydrometer is sometimes used for weighing bodies in water and out of water; and in this way it may be used to determine the specific gravity of solids. The characteristic feature of this second form of hydrometer is that the *volume* of liquid displaced is constant. A great many special modifications of these two forms are to be found. For these consult any good laboratory manual of physics or chemistry.

Hy′drophytes. The name literally means water-plants. The water conditions in which such plants grow range from complete submergence to swamps. Such plants have various adaptations for living in connection with a large amount of water. If the plant lives submerged, there is a feeble development of the tissues for mechanical support, and when it is removed from the water it collapses. Another common adaptation of water-plants, found also in swamp forms, is the development of conspicuous air-passages for aëration. Stalks of water-lilies, calladiums etc. easily show these large passageways. It is necessary for air to be brought into the plant and carried to parts which are too much shut off from air by water. In certain plants which float, bladder-like floats are provided, as in the common bladderworts. There are three conspicuous types of hydrophytes. The first type is made up of the "free floating societies," that is, those in which the plants are entirely sustained by water and are free to move either by locomotion or water currents. To this group belong the ordinary pond societies, composed of algæ, duckweeds etc., which float in stagnant or slow-moving water. The second type is made up of the "pondweed societies," in which the plants are anchored, but their bodies are submerged or floating. Here belong the associations of seaweeds, among which there are often elaborate systems of holdfasts. Another conspicuous pondweed society is that which contains among its representatives the water lilies with their broad floating leaves and the pondweeds or pickerel weeds with entirely submerged leaves. The third type is made up of "swamp societies," in which the plants are rooted in water or in soil rich in water, but the leaf-bearing stems rise above the surface. The conspicuous swamp societies are "reed swamps," characterized by tall rushes, cat-tails and reed grasses, wand-like monocotyledons which usually form a fringe about shallow margins of small lakes and ponds; "swamp moors," the ordinary swamps, bogs, marshes etc., which are covered by coarse grass; "swamp thickets," in which there is a tangle of willows, alders etc.: "sphagnum moors," in which the sphagnum moss prevails and is accompanied by numerous orchids, heaths etc.; "swamp forests," in which the tamarack (larch), spruce, pine, hemlock and juniper are the prevailing trees.

J. M. Coulter.

Hydrotropism (*hī̇-drŏt′rō̇-pĭz′m*), the sensitiveness of a plant to the presence of moisture in greater amount on one side, to which it responds by so altering the rate of growth as to curve toward or away from the source of moisture. Thus the mycelium or nutritive part of fungi grows towards moisture; the reproductive parts generally away from it. In the higher plants this sensitiveness is shown most strikingly by roots. If roots of corn are growing straight downward by geotropism (which see), they will be deflected in a few hours toward a sheet of wet blotting paper hung near them. Growth is accelerated on the side where the air is drier, but is retarded on the moister side. As this is exactly the reverse of the direct influence of moisture, it is clear that the result must be an indirect one, due to irritability (which see).

Hy′drozo′a. Sometimes casual visitors at the seacoast gather certain animal forms from rocks and submerged objects, and press them on paper under the name of seaplant or seamoss. This shows how much some of the hydrozoa resemble delicately branching plants. The general stem is usually horny and hollow. At various points are small, tubular polyps resembling the fresh-water hydra in form and structure. While it is solitary, they are colonial. In this group also the polyps have become modified into several kinds of persons. The feeding persons — with tubular body disc and tentacles — are the most typical. The reproductive persons are often shaped like small jellyfish, and are set free from the colony when fully formed. They are called medusoids. There are in some colonies, in addition to the above, protective persons, swimming persons and stinging persons. These are all modified polyps, and the variety of form gives rise to what is called polymorphism. The hydrozoa make a natural division of the subkingdom *Cœlenterata* (which see). See Hydra.

Hye′na an ungainly, carnivorous mammal of southern Asia and the continent of Africa. The hind quarters are lower and weaker than the fore quarters, which gives them an awkward shambling gait. The body is covered with rather long, coarse hair.

which, along the neck and back, forms a mane. The smallest forms are the size of a large dog, and the largest ones approach the tiger and lion in size. They all have powerful jaws and teeth capable of crushing the hardest bones. They sometimes kill living prey, but feed mainly upon carrion and carcasses left by the lion or other beasts. They prowl at night and dig into graves, and are, therefore, regarded with fear and horror. They, in reality, are of a cowardly disposition and less ferocious than they are commonly believed to be. They have been tamed and kept in place of dogs. There are three varieties. The striped hyena of southern Asia and nearly all Africa is in general brownish-gray with dark cross-stripes on the sides of the body. They live in caves by day and hunt in packs at night. The brown hyena is found in Cape Colony. The spotted hyenas live in southern Africa. They are smaller than the largest varieties of striped hyena, but more dangerous and fierce. Besides howling, this form makes a noise like hysterical laughter, which has gained for it the title of the laughing hyena.

Hygiene. (*hī' jĭ-ēn*) is the name given to that department of inquiry which deals with the causes and prevention of disease in their relation to the preservation of health. As thus defined, hygiene, while founded on medical experience and advanced by medical research, stands out clear and defined from the ordinary run of the science and art of medicine, which deal with the cure of disease. The aim of hygiene is to prevent disease by the due appreciation of the causes which induce a departure from the normal type of healthy life. In this sense hygiene has well been named preventive medicine, since it seeks to anticipate the work of the physician by its endeavor to remove the causes on which the diseases that affect mankind depend. Hygiene presents for consideration two chief phases. The first section, *Personal Hygiene*, relates to the individual as a unit and to his duties in maintaining health and preventing disease. The second section deals with *Public Health*, and concerns the relations which exist between masses of men and the conditions of healthy living. In the first case the study embraces such subjects as food, clothing, habits, heredity and the like, which relates to the personal history of the unit. In the latter case hygiene has to regard the community and the nation and to investigate the laws under which disease is liable to be propagated by the circumstances of collective life. The departments of hygiene which deal with drainage, healthy houses, the removal of waste and the prevention of infectious disease illustrate the subjects with which the health-officer concerns himself.

It is in the 18th century that hygiene begins to appear on the social horizon with something of clear outline and defined aims as a distinct branch of science, pursuing a very practical relation to the lives of men. The sanitary historian has to take account of at least three great names as those of forerunners in the work of hygienic progress John Howard, the philanthropist, largely based his work of jail-reform on improvement in the terrible state of these places of confinement. They were overcrowded and filthy in the highest degree, and as a consequence of these conditions typhus fever (which is a disease of overcrowding) reigned rampant under the name of jail-fever. Howard, by his undaunted efforts, succeeded in clearing the jails of this pest; and to-day our criminals reap the fruit of Howard's philanthropy in the fact that the jail now ranks in reality as the healthiest of dwelling-places. Captain Cook, the navigator, stands out as the second of the sanitary pioneers of the last century. He it was who first showed that scurvy, which essentially is a blood disorder and from which whole ships' crews used to remain prostrate during long voyages, is due to improper feeding. He showed that, in the absence of fresh vegetables, lime juice should be served out regularly to ships' crews. To-day Captain Cook's discovery is duly acted upon in the case of long voyages. The third discovery of importance in the 18th century is that of vaccination by Jenner, which was introduced into practice about 1796.

The advance of medical science — especially the progress which has been made in microscopic research into the causes of disease — together with the spread of education and of a consequent intelligent interest in health science among the people, has tended powerfully to awaken national endeavor in matters both of personal and public hygiene. To-day it may be said that we possess a very fairly equipped staff of health experts in every large town, able and eager to assist and advise the citizens in the discharge of their manifest duties to themselves and their neighbors in the observance of hygienic rules. One of the most important enactments, for instance, is represented by the law which in many towns makes compulsory the notification to the authorities of every case of contagious disease which falls under the notice of the householder or medical attendant or both. In this way it is sought to limit the spread of those infectious ailments which add to the death-rate each year. The authorities, being early informed of the appearance of any cases of these diseases, can take prompt measures for their isolation and their removal, if need be, to the hospital. The seaports, too, are now narrowly watched by the health-officers of these ports, and suspicious cases of illness on vessels arriving in harbor are at once dealt with. Cholera, it may be mentioned, which has run unchecked on the continent of Europe on several occasions within late years, has thus been warded off from the American coasts by the active supervision of the health-authorities at the ports.

Within the sphere of the home health science has of late years made satisfactory progress. The principle of safe and sanitary drainage, whereby a house can be trapped off efficiently from the public sewers and the inroads of sewer-gas (giving rise to typhoid fever and other ailments) prevented, is beginning to be everywhere practiced. In other details, also, the health of our homes is receiving the care it deserves. Questions of ventilation and of lighting are being studied anew, and the warming of houses is no longer left to chance. Personal health, which ranges in its extent from questions of foods and drinks to those of cleanliness and clothes, is not neglected amid the general improvement in hygienic education; so that the outlook in health questions is, on the whole, of the most hopeful kind. Happily, the people at large are beginning at length to perceive and to act on the great truth that only by their personal education in hygiene, and by their knowledge and observance of health laws, can they secure the length of days which of old it was declared Wisdom bore in her right hand.

Hygrom'eter (*hygros* means moisture, *metron*, a measure), an instrument used to measure the amount of moisture in the air at any particular time. The hygrometric condition of the air is indicated by the ratio of the amount of moisture in the air at the particular time to the amount that it is capable of holding at that temperature.

The earliest instruments did not afford a means of determining this scientifically. The hair hygrometer or, rather, hygroscope simply indicated roughly whether the air was comparatively wet or dry. The hair expanded on a damp day and contracted on a dry day.

The wet and dry bulb hygrometer consists of two thermometers exactly alike, fastened side by side on a stand, the bulb of one of which is covered with muslin. The muslin is connected with some sort of wick arrangement leading to a jar of water. The idea is to have water conducted up the wick to the muslin surrounding the bulb, the thin character of the muslin giving the water a good chance to evaporate as rapidly as possible. The evaporation, of course, causes a fall of temperature in the bulb underneath. The drier the day, the faster the evaporation and the greater the fall in temperature of the muslin-covered thermometer. The other thermometer records the actual temperature of the air, and by comparing the two and using a set of prepared tables the hygrometric condition can be determined.

There are several other forms of hygrometer, the most scientific of which, perhaps, is that of Regnault. This instrument is similar in principle to the wet and dry bulb hygrometer, but it is much more precise in construction and makes use of the very rapid evaporation of ether, instead of the slower evaporation of water, to reduce the temperature of one of the bulbs. By this means one of the thermometers can easily be cooled down to the dew-point, that is, the temperature at which the moisture of the air begins to condense as dew. Having the dew-point and also the temperature of the air as given by the other thermometer, the ratio of the amount of moisture in the air to the amount that it is capable of holding can be determined.

Another form of hygrometer is that in which a definite volume of air is passed over a substance, as calcium chloride or sulphuric acid, that will absorb all of its moisture. This substance is carefully weighed, both before and after the known quantity of air is passed over it, and the increase in weight will be the weight of water in the quantity of air passed over.

Hyksos (*hik'sōz*) (meaning shepherd kings), the name given to the kings of Egypt of the 15th, 16th and 17th dynasties. Their capital was Tanis, called Zoan in the Bible. The Hyksos were not the Hebrews, but probably were wandering tribes of Arabia and Syria, mostly Canaanites. They became Egyptians in manners and customs, even worshiping the Egyptian gods. They ruled for about 500 years, from 2200 B. C. to 1700 B. C. or, according to other accounts, from 2000 to 1500. See Sayce's *Ancient Empires* and *Races of the Old Testament.*

Hymet'tus, a ridge of mountains, four miles east of Athens, which reaches a height of nearly 3,000 feet, is famous since ancient times for its honey. The honey appears to be flavored by the wild thyme upon which the bees pasture. Hymettus marble from the mountain quarries has also had a reputation for beauty even from the days of the ancient greatness of Attica.

Hypa'tia a Greek philosopher, daughter of Theon, an astronomer of Alexandria. She was renowned for her knowledge of mathematics and the Platonic philosophy, of which she was a teacher at Alexandria. She was also celebrated both for beauty and modesty. She met a tragic fate. Being accused by the clergy of undue influence over Orestes, prefect of Alexandria, against Cyril, then archbishop there, she was attacked by a mob led by monks, dragged into a church, stripped of her clothing and killed. This occurred about 415 A. D. Hypatia has been made the subject of a romance by Charles Kingsley.

Hy'pha (in plants). The individual thread of the mycelium of a fungus. See FUNGI.

Hyp'notism. This term covers the phenomena associated with an abnormal mental condition resembling somnambulism. The special characteristic of the hypnotized person is liability to suggestion from some one else, ordinarily the one by whose influence the subject is hypnotized This means that whatever is suggested by the hypnotizer is believed or done by his subject, who seems to have given over his will to this control. The subject may be made to eat with apparent relish objects ordinarily disagreeable to taste or to reject dainties with disgust. He may be made to perform ridiculous antics or find it impossible to close his eyes or to raise his arm. When the hypnotizer suggests that his subject is in a certain condition or should act, feel or think in a certain way, the latter becomes possessed by the idea thus presented and is unable to resist the tendency to carry his thought into action. In the hypnotic condition one may become abnormally rigid (cataleptic), insensible to pain so that a needle thrust through the hand may not hurt or, perhaps, extraordinarily sensitive to certain sights, sounds or touches. After being roused from the hypnotic state, a result accomplished usually only by the suggestion of the hypnotizer, the subject ordinarily forgets all that happened while under the spell. He may, however, be made to carry out, after waking, suggestions given during hypnotism, or may spontaneously lapse into the condition at a suggested time or occasion.

The method by which one is hypnotized can not be said to be reduced to a science, but in general it is now admitted that the mysterious passes, stroking etc., usually employed, serve only to distract or diffuse the attention, so that the subject spontaneously lapses into the hypnotic slumber. In brief, one hypnotizes himself, and the skill of the hypnotizer lies in his ability to get his subject to do this. The supposition of Mesmer (1734–1815) that there are mysterious magnetic influences exerted by the body of the hypnotizer has been exploded.

Hypnotism possesses much therapeutic value, especially with nervous diseases, which can often be helped by suggestion. Bad habits, like the excessive use of tobacco or alcoholic drinks, may sometimes thus be broken up. Crimes have been committed as a result of hypnotic suggestion, but it is generally admitted that this is possible only when there are no ingrained scruples against them in the minds of the subjects. Indeed, as very few can be hypnotized against their will, very little can be successfully suggested that antagonizes the character of the subject. Consult Moll's *Hypnotism.*

Hypocotyl (*hī'pō-kō-tĭl*) (in plants). The stem-like portion of the embryo of seed-plants. The name refers to the fact that this part is beneath the cotyledons or first leaves. See EMBRYO.

Hyp'oder' mis (in plants). The name literally means beneath the epidermis, and usually refers to a supporting tissue which develops in that position. However, the word is often used quite generally, and is merely one of position. For example, a hypodermal cell merely means a cell of any kind immediately beneath the epidermis. Occasionally a definite tissue is developed beneath the epidermis, distinct from other tissues, and to this is very properly given the name hypodermis.

Hypogenous (*hī-pŏj'ē-nŭs*) **Flowers,** those in which the sepals, petals and stamens originate beneath the ovary In this case the ovary is often said to be "superior," that is, it is to be seen within the flower, arising above the origin of the other parts. The contrasting term is "epigynous." Hypogynous flowers are regarded as more primitive than those that are epigynous, as hypogyny prevails in all of the more primitive families. See FLOWER.

Hysteresis (*hĭs'tē-rē'sĭs*), a term employed in the science of magnetism to describe the fact that in substances which are magnetic the induction always lags behind the magnetizing force. The word is simply the Greek word for lagging behind. The most familiar illustration of this phenomenon is found in the case of a piece of iron which has been placed in a strong magnetic field and has then been removed from it. If the iron be hard, a considerable proportion of the induction remains even after the magnetizing force has been reduced to zero; and we have what is known as a permanent magnet. It has been shown that the amount of hysteresis in iron largely determines the amount of energy lost in heating the iron when it is used as the core of a transformer. Hysteresis, therefore, is a quantity of great importance to electric engineers. See Ewing's *Magnetization of Iron and Other Metals.*

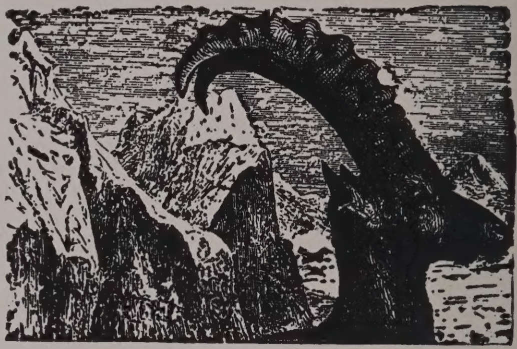
I

I (*eye*), the ninth letter, is a vowel. Its original sound was *e* in *mete*. The principal sounds are a long sound, as in *pine*, and a short one, as in *pin*. It also has the long and the short sound of *e*, as in *machine* and *thirst*. When it precedes another vowel, it is a consonantal *y*, as in *Christian*. The dot over *i* came in the 13th century. Originally *I* represented *J* too, *J* originating by lengthening *I* below the line. Until recently, even after *J* got into English dictionaries, words beginning with *J* were grouped with those beginning with *I*. The Romans used it as a numeral (1) as well as a letter.

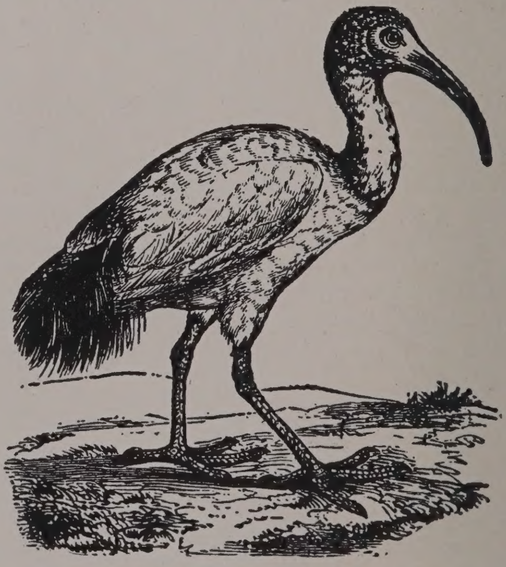
Ibe'rian Peninsula. The westernmost of the three peninsulas that project southwards from Europe into the Mediterranean. It is named for the ancient inhabitants, whom the Greeks and Romans called Iberi. Owing to the Pyrenees Mountains and the general position of the peninsula it has been somewhat shut out from the life of the rest of Europe.

Iberville (*dê bâ'rvêl'*), **Pierre le Moyne, Sieur d',** a French-Canadian explorer, was born at Montreal, July 16, 1661, and entered the French navy as midshipman while still a lad. He took part in the French expedition of 1690 to northern New York. He captured Fort Nelson from the British in 1694, took part of Newfoundland in 1696, and defeated them in the naval battles of 1697. In 1699 he entered the Mississippi River, and founded the first French settlement in Louisiana, at the head of Biloxi Bay. Returning from a visit to France in 1701, he transferred the Biloxi settlement to Mobile. In 1706 he captured the island of Nevis from the English. He died at Havana, Cuba, July 9, 1706.

I'bex, a mountain goat found wild in the Alps, Pyrenees, Caucasus and Himalayas. The family is divided into ibexes and goats proper. The ibexes have large horns crossed on the front surface by ridges and furrows. There are two kinds, the ibex of the Alps and that of the Pyrenees and Himalayas. The Alpine ibex (see illustration) or steinbok is about two and one half feet high at the shoulders, and may reach a weight of 200 pounds. It has become rare in the Alps, and is protected by law. The hair is reddish-gray in summer, turning to dead-gray in winter. The horns are large; they diverge backward and the points turn downward. In the male they reach a length of two or two and one half feet. The ibex lives above the snow-line during the day and descends at night to feed. The males for the most part live alone, higher than the females, but join their mates in January. The ibex of the Pyrenees has more divergent horns, with the tips pointing inward, and the transverse ridges are less prominent. Hunting the ibex is very difficult.


HEAD OF ALPINE IBEX

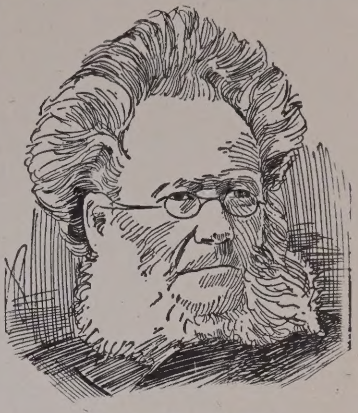
I'bis, any one of a family of wading birds related to storks and herons. It has a heavy, rounded, curved bill and feeds chiefly on reptiles, fish etc. Ibises are sociable birds, nesting together in colonies. Like herons and egrets, they have been slaughtered for their plumes, large numbers being sacrificed. The sacred ibis of the ancient Egyptians had white feathers, except the plumes over the hind quarters, which were


THE SACRED IBIS

black. The head, neck, legs and feet were destitute of feathers and covered with black skin. It was kept in temples and embalmed after death. It is doubtful if it occurs in Egypt to-day, north of Khartum. The bird pointed out to travelers as the sacred ibis usually is the buff-backed heron. The glossy ibises, of chestnut color, with head and neck feathered, are distributed over all the warmer parts of the globe. In North America two species are found. The glossy ibis is still to be seen in Florida and the southwest. The white ibis, only a few now remaining in Florida, is a snow-white bird, its whiteness emphasized by the black of the four outer wing feathers. The splendid scarlet ibis may no longer be found in its old haunts in Florida and Louisiana. The spoon bills are like other ibises, save as to the shape of the bill. The wood ibis, native of South America, breeds as far north as Florida. Formerly it was grouped with the ibises, but it leans toward the storks. On the sacred ibis see Wilkinson's *Manners and Customs of the Egyptians.*

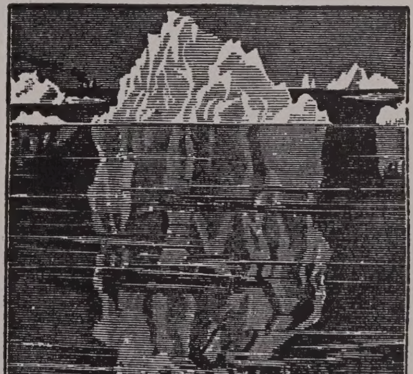
Ibrahim Pasha (*ĭb-rȧ-hēm′ pä-shä*), viceroy of Egypt and son of Mehemet Ali, was born at Kavala, Rumelia (in European Turkey), in 1789, and died at Cairo, Nov. 9, 1848. During his father's viceroyalty (1811-48) dead Egypt enjoyed a galvanic prosperity, which was in great measure imparted by Ibrahim's success as a general. The wild tribes of upper Egypt were overrun in 1812; the Wahabees and part of Arabia fell before him in 1816; and in 1820 Nubia and part of the Sudan were added to Egypt, and Egyptian troops fought in aid of the Turks against the Greeks from 1821 to 1828. His greatest exploit, however, was the conquest of Syria in one year, beginning with the victories of Tripoli and Horus. Pushing into Asia Minor, he routed a Turkish army at Koniya and found an open road between him and Constantinople. But the Powers now stepped forward, and Egypt was obliged to be content with Syria, which she had won by force of arms. War again breaking out in 1833, another splendid victory at Nisib would perhaps have given Mehemet Ali the throne of Constantinople, but the Powers again called a halt, and Ibrahim was even forced out of Syria, of which he had been governor since its conquest. Ibrahim ruled as viceroy, however, only during the last two months of his life, being called to the government because of the childishness of his father, in 1848. Ibrahim's son was the first khedive of Egypt. See Stanley Lane-Poole's *Egypt.*

Ib′sen, (*ĭp′sen*), **Henrik,** a Norwegian lyric poet and dramatist, was born at Skien in southern Norway, March 20, 1828. He was a student at Christiania University, but did not graduate. He engaged in journalism for two years, and was then made director of Ole Bull's theater at Bergen. His first play, *Catalina,* was produced in Christiania in 1850. At Bergen he wrote *The Banquet at Solhaug* and *Lady Inger at Ostraat.* In 1858 he wrote *The Warriors of Helgeland;* in 1862 *Love's Comedy;* in 1864 *The Rival Kings.* These works gave him high rank among modern Scandinavian dramatists. In 1864 he left his native country and lived abroad for the most part until 1892. In 1866 the parliament of Norway granted him a pension. His dramas are partly in prose, partly in verse, and include historical plays and satirical comedies of modern life. His later works include *Brand, The Pillars of Society, A Doll's House, Ghosts, An Enemy of the People, Little Eyolf, Hedda Gabler* and *The Master-Builder.* Most of these have been published in English. He died on May 23, 1906.



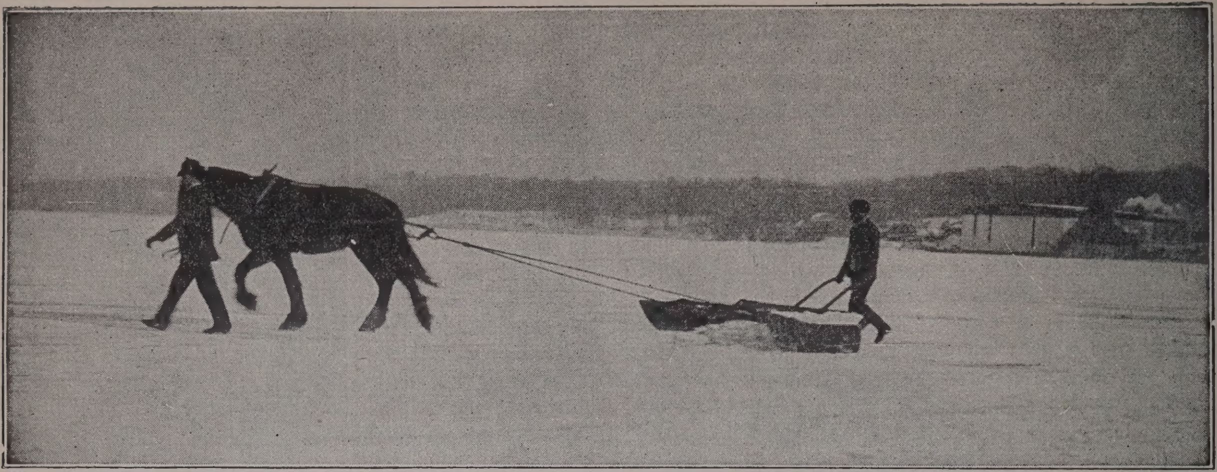
HENRIK IBSEN

Ib′ycus, a lyric poet of the 6th century, B. C., born in the Greek colony of Rhegium in southern Italy, is best known to moderns from a poem of Schiller, *The Cranes of Ibycus.* Ibycus is known to have been a wandering bard, but Cicero ranks him with so great a poet as Anacreon. The story of his death, according to Schiller's poem, is that, when mortally wounded by robbers, he called upon a flock of cranes to avenge him. This they did, for, when a flock of cranes passed over the theater at Corinth during a performance, one of the assassins who was present involuntarily cried out: "Yonder are the avengers of Ibycus!" Thus the murderers were detected, and the crime avenged.



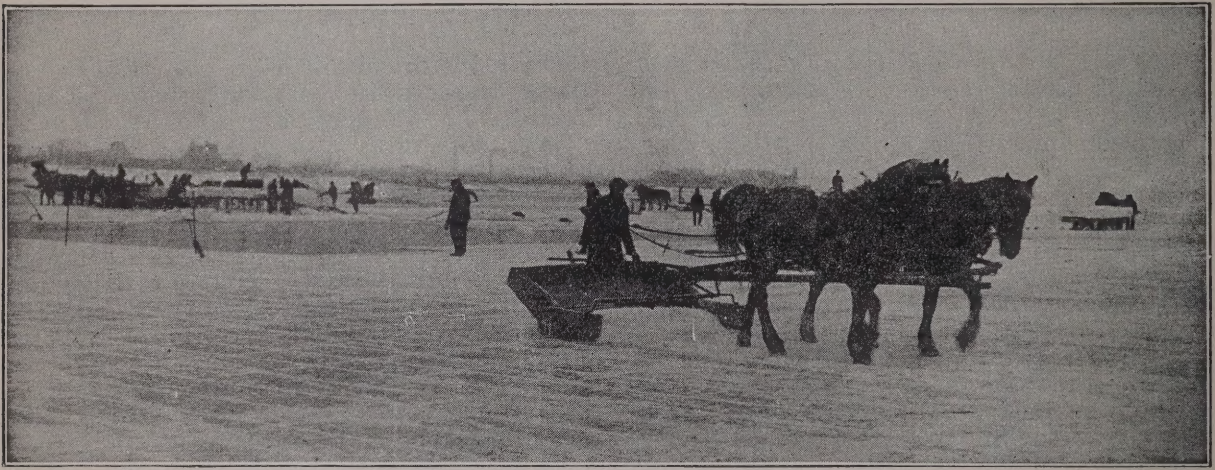
AN ICEBERG
(Showing the Proportion Under Water)

Ice is water in the solid form. The usual temperature at which water freezes is 32° Fahrenheit. The formation of ice is usually at the surface, owing to the peculiar property water possesses of ceasing to contract when it is within 7.4



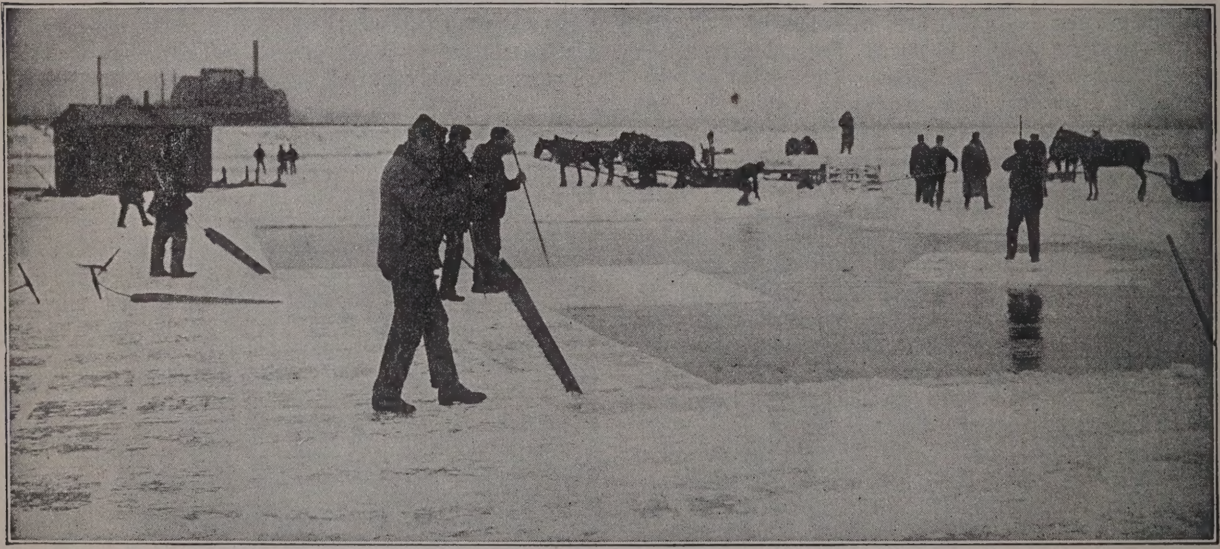
From Brown Bros.

ICE HARVESTING. The snow is first cleared by means of scrapers very much like the scrapers used in building roads or making excavations for the foundations of buildings. It takes two people to do this, one to lead the horse, the other to hold the scraper to its work.



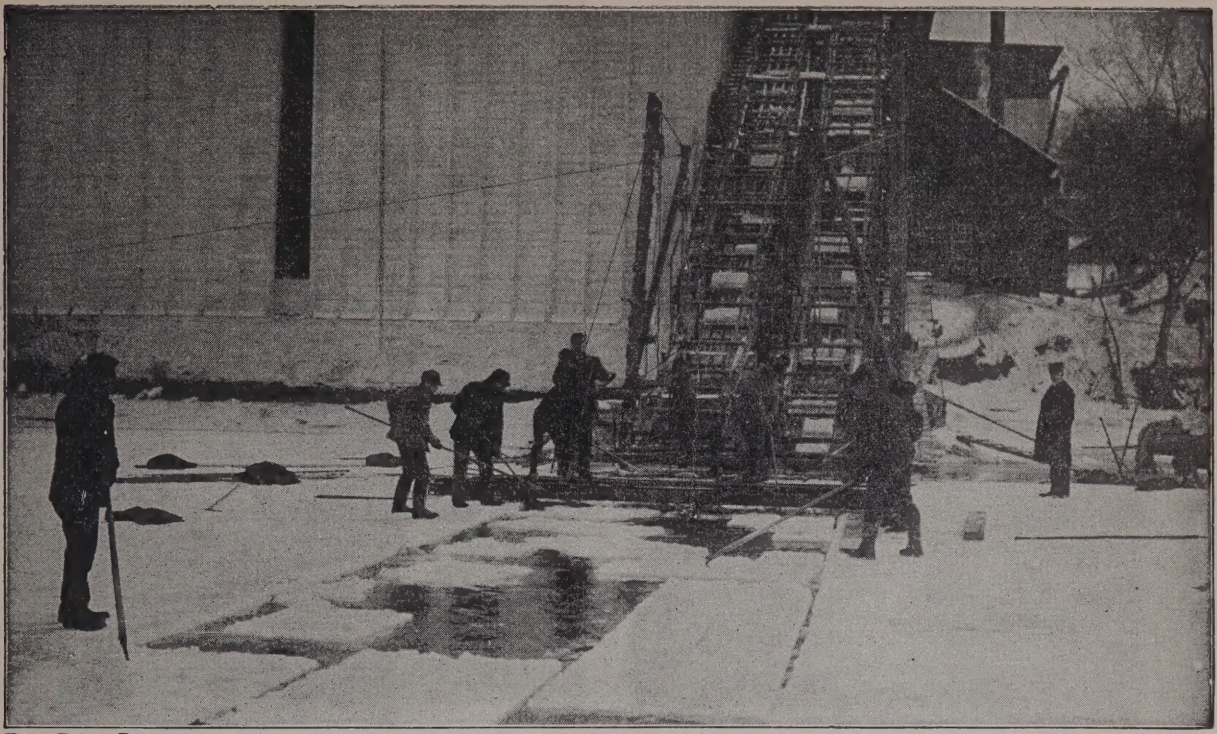
From Brown Bros.

After the snow has been cleared away deep parallel grooves are cut in the ice with what is called an "ice plow." These ice plows are sometimes driven by steam but horses are usually used as you see in the picture. With this plow grooves are cut in the ice in both directions so that the ice is divided into blocks about three feet square. Unless the ice is very thick the plow cuts very nearly through.



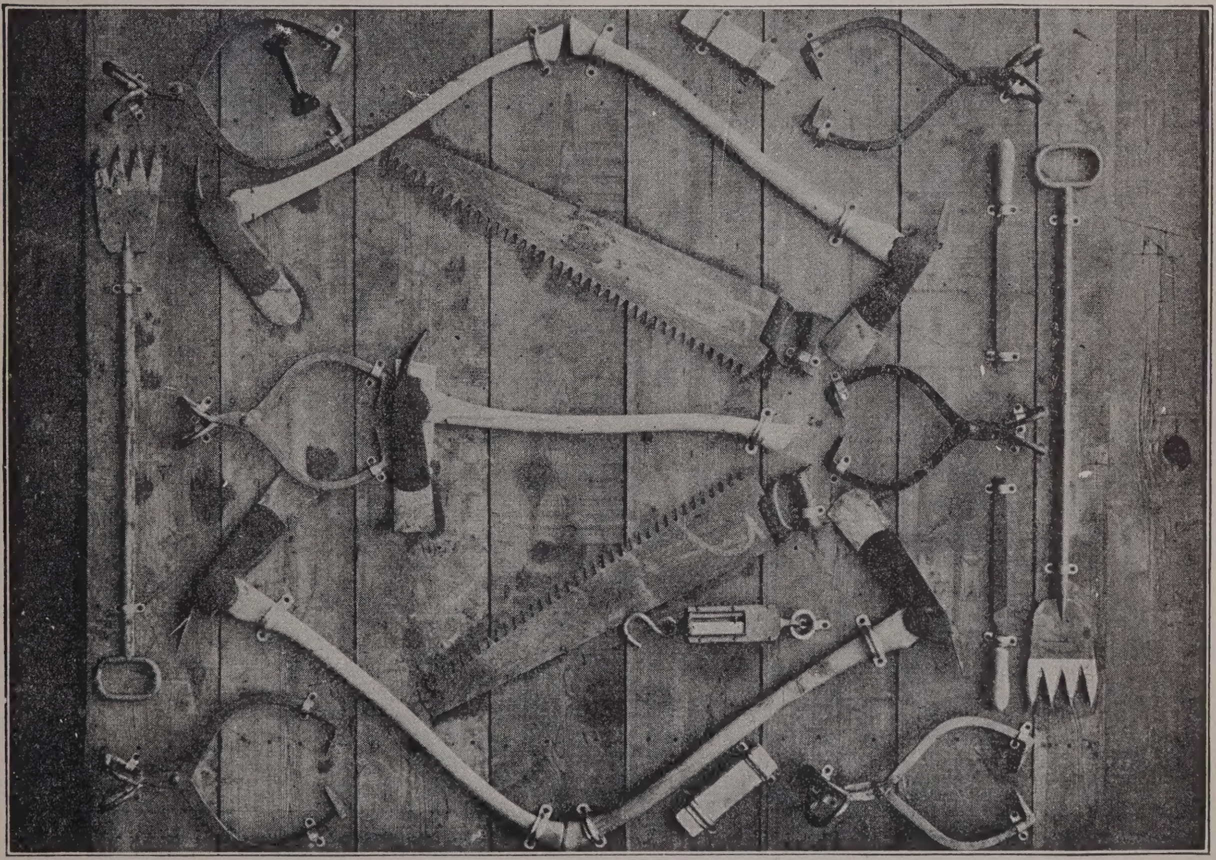
From Brown Bros.

After the ice has been cut nearly through with the plow the rest of the work is done with a saw, one end of which runs down into the water. After the ice cakes are sawed out by one set of men another set pry them apart with crowbars, while a third set floats them down channels, made for the purpose, toward the ice house.



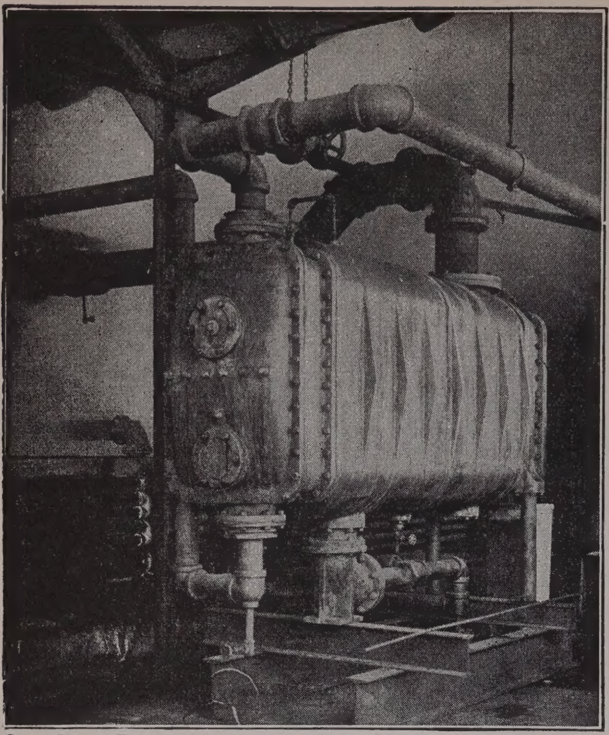
From Brown Bros.

This picture gives a rear view of the ice elevator which you see at the side of the ice house in the first picture. The cakes of ice are floated to the foot of this elevator and carried up into the ice house by an endless chain arrangement similar to the device that carries away the straw and chaff from a threshing machine. At intervals on this chain, which runs over sprocket wheels at the other end, are cleats. The distance between these cleats is a little over the width of a cake of ice. The men at the foot of the elevator push a cake into each section as it comes along. The ice is carried by the elevator up into the warehouse, where it is packed in sawdust.



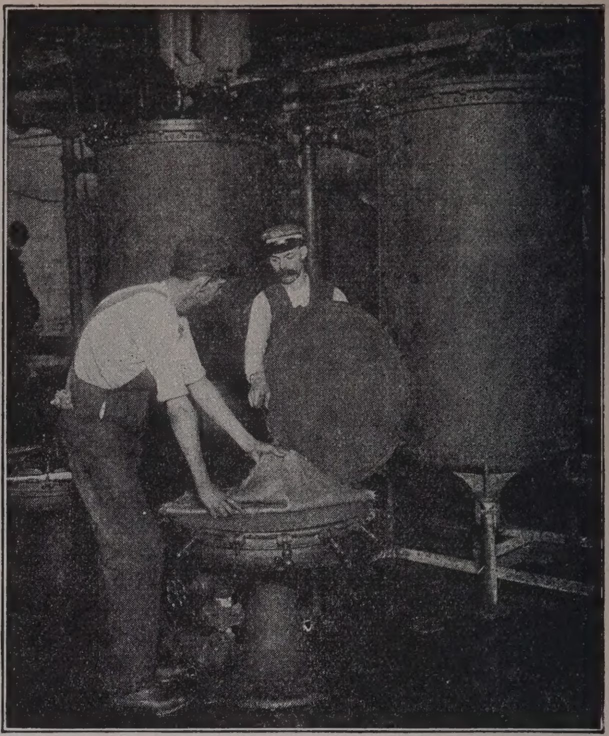
From Brown Bros.

This picture shows the various tools used by ice harvesters and the men who deliver ice at your door. Here you see various forms of ice tongs, ice shavers, files and stones for sharpening the tools, ice axes and ice scales. Besides these there are augers for drawing off surface waters, forked bars for prying the cakes loose, trimming bars for squaring them, and chisels, adzes and edging tongs used in packing the ice in the warehouse.



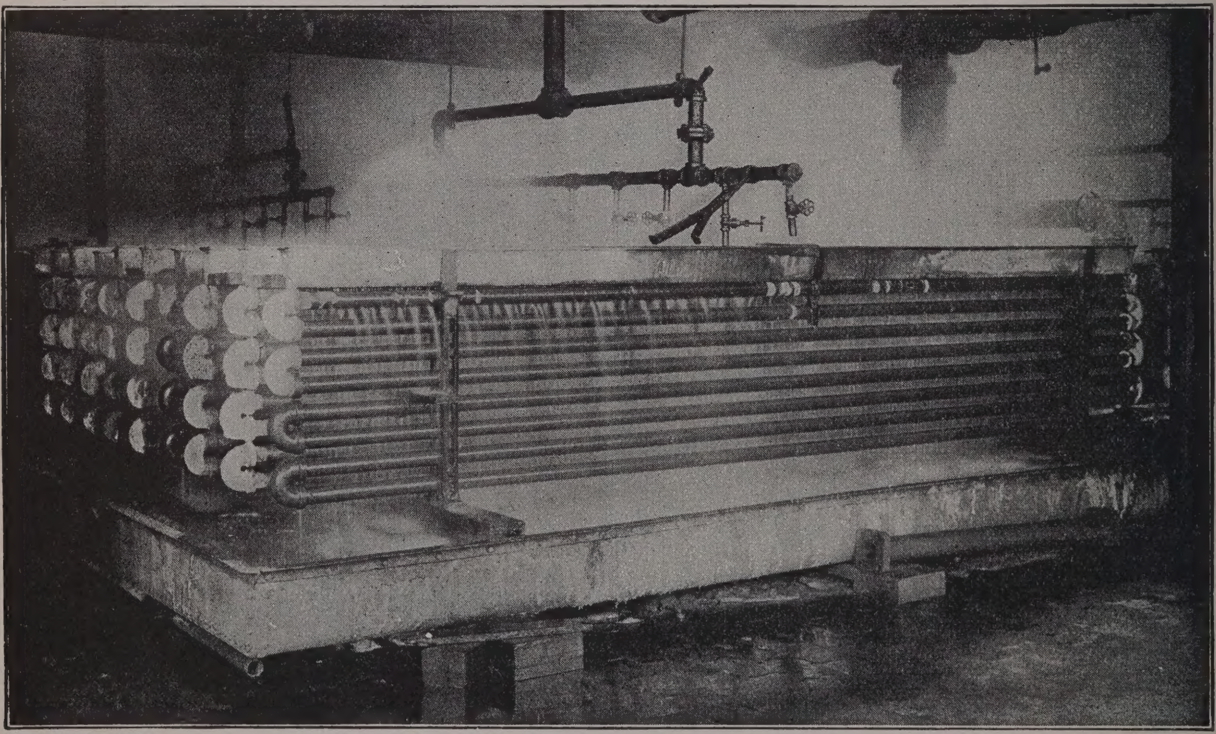
From Brown Bros.

HOW ARTIFICIAL ICE IS MADE. In making artificial ice the first step is to get pure water. The water is boiled and then allowed to stand so that the impurities may settle. After this sediment has settled the water is drawn off and distilled; that is, it is turned into steam and this steam is condensed back into water, as your breath condenses on the window on a cold day. This picture shows a condenser. In the condenser is a series of parallel pipes inside of which cold water is kept running. The steam to be condensed comes in through one of the large pipes which enter the condenser at the top. The other large pipe supplies the cold water and connects with the coil of smaller pipes inside. As the steam is condensed into water it falls to the bottom of the condenser and passes out through the pipe at the end of the condenser nearest you.



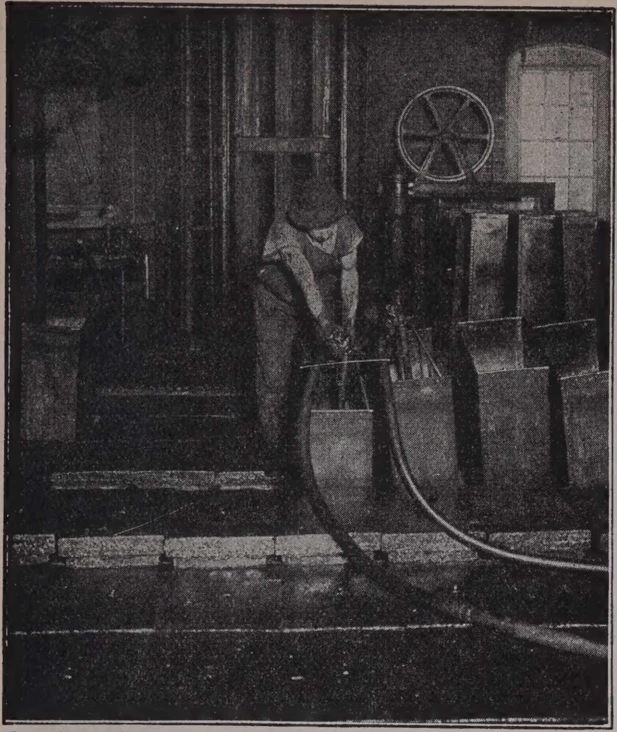
From Brown Bros.

Distilled water is run through several kinds of filters. In this illustration the two large cylinders you see in the rear are charcoal filters. After the water has passed through these cylinders it is pumped through pipes into the kind of filters at which you see these men at work. The men are putting on a fresh filter cloth. Over this cloth is fastened another and coarser filter of perforated metal. Under the cloth is another disk of perforated metal. The water enters by the small pipe in the rear, is forced through the perforated metal and cloth and comes out into the larger pipe you see in front.



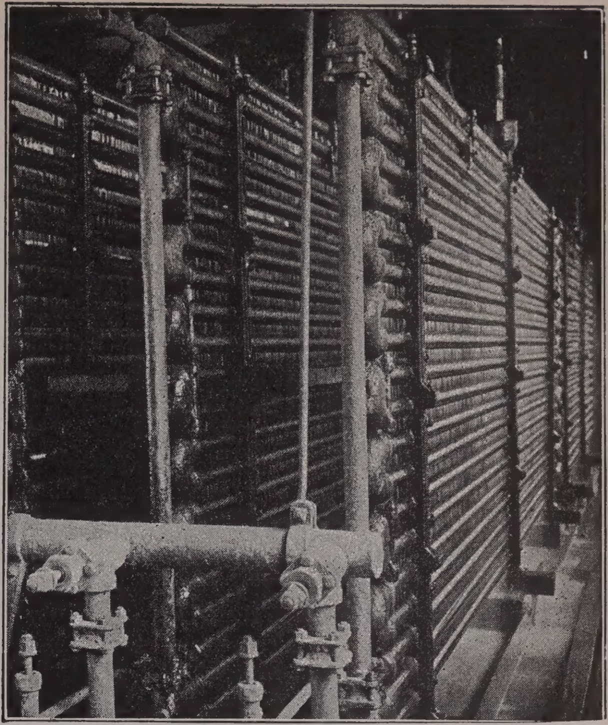
From Brown Bros.

After the water leaves the condenser it is still warm, so it is made to pass through another series of parallel pipes. Over these pipes a spray of cold water is kept playing, which still further cools this distilled water on its way to the filters shown in the next illustration. In making artificial ice the greatest care is taken to secure pure water. Before it is even distilled in the condensing system this water is boiled and then allowed to stand so that the impurities may settle. It is then drawn off from this settling tank, converted into steam and condensed.



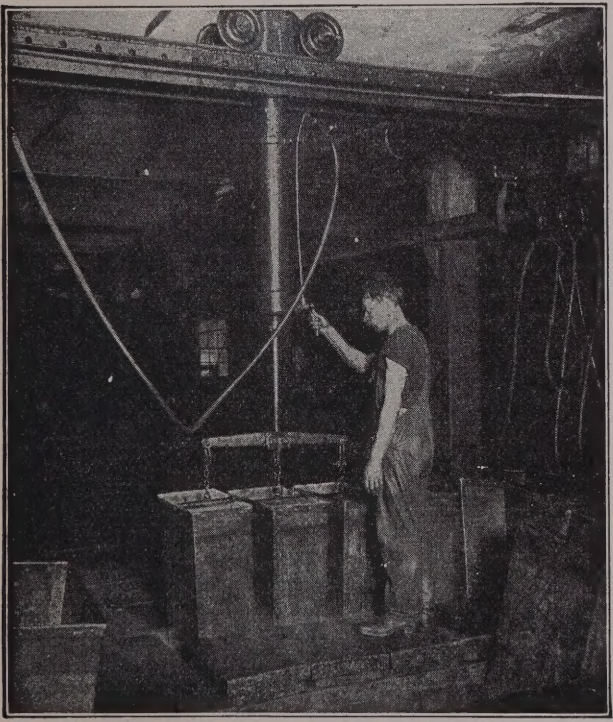
From Brown Bros.

This man is filling the cans with distilled water. It is in these cans the ice is made. On the bottom of the tube you see held in its place in the can with braces is a valve, opening upward. When this valve is pressed against the bottom of the can it lets out enough water to fill the can almost to the top. When the water reaches a certain height it is stopped by a floating check valve. A floating check valve is one which has a hollow metal ball attached so that when the water in which it floats reaches a certain height it turns the valve and either shuts off the water or releases it, as desired.



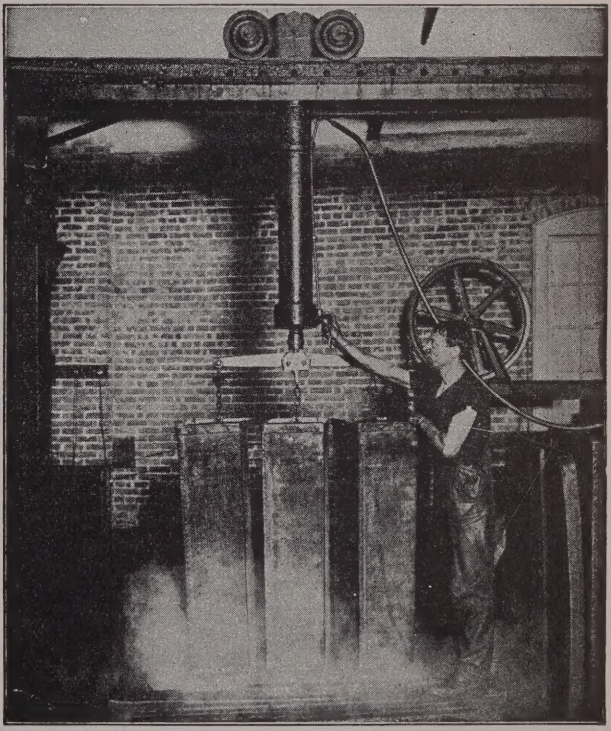
From Brown Bros.

Most artificial ice is made by what is called the compressor system. It is called the compressor system because the ammonia with which the freezing is done is first compressed by means of powerful steam pumps These pumps then force it through pipes over which cold water is running. This cold water bath still further condenses the gas to a liquid state, which drives out all the heat there is in it. The illustration shows how water is kept playing on the pipes containing the compressed ammonia.



From Brown Bros.

After the ammonia has been condensed to a liquid state, it passes into a great cylinder called an evaporator. Here it begins to expand again back to a gas and passes into parallel pipes like those you have just seen. But these pipes run through a tank filled with brine. When the ammonia is condensed to a liquid form it gives up all its heat, just as water does when it turns to ice. Then, when it is allowed to expand in passing through the pipes in the brine tank, it absorbs the heat from the brine and makes it freezing cold In this brine tank are set the cans of distilled water to be frozen. This illustration shows the cans being lowered into the brine.



From Brown Bros.

After the cans have been lowered into the tank they are covered with wooden slabs that fit down into them. The cans are allowed to remain in the brine until the distilled water becomes a solid block of ice. They are then lifted out by a crane, such as you see this man working with and carried by an overhead trolley to the "thawing off" tank. This tank contains warm water. This man is lowering the cans into this warm water tank. They are allowed to remain just long enough to loosen the ice from the can. After the ice is loosened twenty or more cans are emptied of their ice at the same time and the ice is taken to the store house.

of freezing and beginning to expand. This expansion continues until it becomes solid at 32°, which brings the coldest water continually to the surface. Sea water and salt water freeze, but at a lower temperature than pure water. The salt is separated in the process, and the ice, if melted, produces water pure and fresh. The deep-blue of pure ice is best seen in the clefts of glaciers and icebergs. The trade in ice is one of great and increasing importance. It is stored in large quantities, being cut in cakes and packed in sawdust. By a recent invention ice has come to be manufactured. By the machine used 52° of cold are reached; and in India and the tropics, where ice was once never seen, it is now produced in large quantities.

Ice-Age, The. The ice age or glacial period is the time when the northern part of North America as well as much of Europe and Asia, was covered with a sheet of ice, above which rose only the highest mountain peaks. In North America the ice probably was thickest in Labrador, near the western shore of Hudson Bay and in the mountains of British Columbia. From these points the ice seems to have flowed in all directions, but especially southward. For the movement of ice, which is very slow, depends, like the movement of water, upon the slope, not of the bottom, but of the surface, of the ice. The White Mountains were covered, the ice at this point being 6,000 feet thick at least. In southern Connecticut it was 1,000 feet thick. In Norway it was not less than 6,000 feet in depth. Central Europe and the plateau of central Asia were covered, and the ice flowed down the southern slopes of the Himalayas toward the plains of India, reaching within 2,000 feet of sealevel. Some think that the ice age closed as late as 40,000 years ago or even later; but most suppose that it was more remote. It seems that within the ice age there were many glacial periods, between which the area affected became very much warmer. Then the glaciers retreated northward, often blocking up the rivers with broken ice and drift, while the waters from the melted ice covered the land with great lakes. Lake Agassiz, which once covered much of Minnesota and Manitoba, was thus formed. It was 700 miles long from north to south. The last invasion of the glaciers left the thickest deposits of rocks, soil and clay, which the ice had scraped or broken off from the land it passed over or from the sides of the valleys it passed through and carried down to the end of its course. This line of thickest drift, called the great terminal moraine (see GLACIER), passes through Perth Amboy, N. J., near Elmira, N. Y., near Cincinnati, then in an "irregular, sinuous line" through Indiana, Illinois and Iowa and northwesterly through the Dakotas and Montana to Canada.

This ice age is not only wonderful to contemplate; its effects are most important. New England it has covered with broken rocks of all kinds, some of them of enormous size, brought hundreds of miles from where the ice must have broken them off from the bedrock. New York and New England owe to this age the many beautiful lakes which are but river-valleys flooded by the deposits of drift that block their ancient channels. The many falls in the east and west are in most cases due to the same cause; for the old rivers were turned from their old beds which they had worn smooth, and they still have rough paths to follow in the new beds that they then found. In Kansas, Iowa, Minnesota and Dakota are many peatbeds, some of which are due to the floods which prevailed during the warm interglacial periods; while much of the rich soil in those states is due to the great lakes of fresh water that existed then. Less important but interesting signs of the ice age are the kettle holes that abound in the northern states, depressions without drainage, due to the great masses of ice cut off from the glacier, as it retreated, and buried in heaps of deposit. The ice melted and left the hollow that still endures. Then in many places there are surfaces polished by the gritty surface of the ice or grooved by the rocks which the ice carried on in its vice-like grip.

The waves of ice gradually encroaching upon the previously warm regions of the earth must have submitted all living things to many new and disturbing conditions. In consequence many great mammals became extinct at this time; and it is possible that at the same time man assumed those features that separate him so markedly from all other animals.

The cause of this wonderful ice age is still unknown. Some say that it was due to the elevation at that time of those parts of the earth where the ice gathered; when the land sank again, the glaciers disappeared. Others attribute it to the fact that sometimes the earth is farthest from the sun in winter time; while thousands of years afterwards it is farthest from the sun in summer. In the former case more ice is supposed to accumulate in the winter than the summer can remove. Thus there are a constant increase of ice and an ice age. In the latter case the ice is removed each summer, and the ice age or glacial period ends. PERCY HUGHES.

Ice'bergs. In the polar regions there are masses of ice covering vast fields and streams during all seasons. When the sun is hottest, huge pieces detach themselves from these icefields and glaciers and float into the open sea. These bergs or mountains of ice sometimes are more than 250 feet above the sealevel, while the volume of ice below sealevel is about nine times that above. At a distance they have the appearance of dazzling white chalk cliffs of the most fantastic shapes. See GLACIERS.

Ice'land, is an island in the northern Atlantic, on the borders of the Arctic Ocean. It lies 130 miles east of Greenland and 850 west of Norway. It belonged to Denmark. Its area is 39,756 square miles. Iceland in many respects is one of the most interesting parts of the world. Its physical features are very remarkable, and not less so its history and the character of its inhabitants. It consists in great part of lofty mountains, many of which are active volcanoes. Only certain level districts along the coasts and a few valleys are inhabitable or in any degree capable of cultivation. There is scarcely a tree to be seen, and the climate is unsuitable for grain. The interior is almost entirely occupied with rugged tracts of naked lava and other volcanic scoriæ. In many places vast ice-fields connect high mountain summits, and prodigious glaciers descend in some parts even to the coast, where they break off into icebergs. To go from one inhabited spot to another is difficult and dangerous, but civilization has long been established. The people are poor but intelligent. The people fish and farm, and are banded together in one of the most successful co-operative marketing societies in the world. The society buys the dairy produce, sheepskins, and seals and sells them in foreign markets; it also imports most of the necessities and luxuries of life for its members. Electricity is used even in isolated farmhouses. The fine arts are pensioned. The mineral wealth of Iceland has just begun to be developed. The population in 1910 reached 85,089. The people are of Scandinavian origin. The legislature, called the *althing*, consists of two houses. The capital is Rejkjavik. The chief exports are Iceland moss, wool, dried fish, sealskins, whale-oil, sulphur, eider-down, birdskins and ponies. In 1918 Iceland became independent of Denmark, which had controlled it since 1381, except Denmark retains charge of foreign affairs until 1940.

Ice-Machin'es and Ice-Cut'ting Tools. There are several types and many varying manufactures of ice-making machines, all depending for success upon the principle that cold is produced by the expansion of compressed air, gas or a liquified vapor, as ammonia. The machines most used are those known as ammonia machines because of their use of anhydrous or waterless ammonia. In such machines there is an evaporator or congealer, in which the ammonia is vaporized. This vapor is then compressed by a pump into liquid, the process being aided by a stream of cold water. This part of the process is merely economical, making it possible to use the same ammonia over and over. The ice is manufactured by running the ammonia into coils where it vaporizes. These coils are led into tanks of strong brine. The evaporation in the coils causes intense cold, and the brine is deprived of its heat of made cold in much the same way that water or a room may be heated by pipes or coils carrying steam. That is, they would be made cold instead of warm. of the pipes which carry steam were made to carry this ammonia vapor. Cans of water, set in this chilled brine, are thus frozen. The cans are thus the molds of the ice-blocks that are turned out, and these are of various convenient sizes. The brine is used to surround the cans, because it will still remain liquid under a degree of cold that is sufficient to freeze the water in the cans that are immersed in it. The vaporized ammonia is again gathered and compressed, and again used in producing cold. The pumps, compressors and other machinery of the modern ice-machine are the accessories merely that make practical the industry of producing ice according to the old and well-known law that rapid evaporation produces cold, as does also the sudden release of compressed air or gas. The modern economy known as cold storage is the result of the processes above described, save that the coils to carry ammonia are placed about the sides of large storage rooms and reduce the temperature of the air, as in ice-making they reduce that of the brine in tanks. Ice-cutting tools are such as are used in gathering—"harvesting"—the natural ice in rivers, lakes and pools, so as to store it for summer use. The "planer" is used to clear the ice-surface of snow. It is a one-horse scraper. The "marker" then comes into use to lay out the intended field into cuttings. It is a kind of plow, drawn by a horse, with several shares which cut marks upon the ice. The ice-cutter is a similar machine whose shares cut deeper than those of the marker, and, if the ice is thick, it is run several times in the same cuttings, so that the ice is finally nearly cut through. The cross-cuttings, by which the ice is cut into blocks or slabs, are usually made by hand. Other tools are used to detach the blocks and seize or push them, while floating, toward the chute or elevator of the ice-house.

Ich'abod Crane, the youth who in Washington Irving's *Legend of Sleepy Hollow* "tarried" in Sleepy Hollow for the purpose of instructing the children in the vicinity, is the hero of the famous adventure with the "headless horseman." He was a type of many schoolmasters of the old school, stern but just, boarding in an itinerant way with the farmers, some thing of a leader in the singing in church.

esteemed by the women folks and altogether "an odd mixture of small shrewdness and simple credulity." The practical joke upon Ichabod which led to his departure from the theater of his courtship and to ignominy, became the foundation of a superstitious legend among the old country-wives.

Ichneumon (*ĭk-nū′mŏn*), a flesh-eating quadruped, having a long, slender body, small head, sharp nose, rounded ears and short legs. The name is of Greek derivation, and means "the tracker." It was given because the ichneumon hunts out the eggs of the crocodile. The species are numerous, and are natives of Africa and the warmer parts of Asia. They feed on small animals, reptiles, eggs and insects. Once the Egyptian ichneumon was a sacred animal, and with its relative, the mongoose of India, was supposed to destroy serpents and poisonous reptiles. Many wonderful fables are told of its power. The ichneumon is easily tamed, and is useful in keeping the house free from rats and other vermin. It is exceedingly valuable for the destruction of the rats and mice that infest a grain country, and especially for the deadly warfare it carries on against poisonous snakes.

Ichneumon Flies, insects with four membranous wings, that have the habit of laying their eggs in or upon other insects. In this way they destroy many insect pests. All are parasites upon other insects; as a rule, upon those injurious to vegetation. Caterpillars are especially subject to their attacks. The eggs are frequently placed in their little cases upon the skin of insects. After hatching, the larvæ bore their way into the insects and feed upon the blood and juices of their host. The insects thus attacked die, and the small flies come out. The ichneumon family includes minute forms and large ones. The largest one in the United States is an insect of remarkable appearance, with a slender body and three long filaments at its hinder end. The body is about two and one half inches long, and the extreme length from tip of antennæ to tip of filament is ten inches. The middle filament is an ovipositor to aid in laying the eggs. It is armed with a file at the tip. With this instrument the insect bores into trees infested by the larvæ of another insect, viz., the pigeon tremex, which does so much harm to shade-trees. When the burrow of one of these is found, an egg is deposited in it. The larva which hatches creeps along the burrow and attaches itself to the tremex larva, which it destroys by feeding on its body.

Idaho (*ī′dȧ-hō*), is one of the Rocky Mountain States, located in the extreme northwestern part of the United States. The name is of Indian origin and means "Gem of the Mountains." On the north it is bounded by Canada; on the east by Montana and Wyoming; on the south by Utah and Nevada; and on the west by the states of Washington, Oregon and the Snake River. It is the first state one enters just beyond the Rockies when travelling westward. The northern boundary is the forty-ninth parallel; the southern boundary the forty-second; the western boundary is the 117th meridian except that in the middle the line follows the Snake River for approximately 200 miles. The eastern boundary starts at the southeastern part with the 111th meridian and ends on the 116th meridian. The entire effect of the State is that of a ham in form, square at the large end. Its maximum length, north and south is about 490 miles, east and west 325 miles. Its total area is 83,888 square miles.

Surface. The fact that its surface is so diversified accounts for scenery more varied than that found in any of the other states. The State is extremely mountainous, the greatest elevations being in the northeastern section, reaching a height of over 12,000 feet. These particular elevations are a veritable region of snow. Some of the mountains are heavily timbered. There are sheer canyons with granite walls, upland meadows with tall grass, extensive plateaus, fertile valleys, low foot-hills suited in the north of the State both to summer and winter crops of wheat. There are numerous lavabeds, which geologists the world over study, placid lakes, hot and mineral springs famous for their medicinal properties, and useful for their heating properties in winter. Numerous falls, exceeded only in volume of water and depth by Niagara, abound throughout various sections. Most of the surface lies below an elevation of 5,000 feet. The drainage is accomplished almost entirely by the Columbia River. The waters of the southern four-fifths of the State reach the Columbia River through its largest tributary, the Snake River. The Snake valley contains one lava desert having an area of 20,000 square miles, in which region there are soda springs and hot pools. This region has been found to be rich in fossils of animals, the remains of the elephant, mastodon, tapir and huge lizard and similar animals having been discovered here.

Climate. Because of the difference in latitude, the climate is quite diversified. It is a dry, stimulating and healthful atmosphere. The winters, except at great altitudes, are neither severe nor protracted, and the summers are free from the humidity which characterizes the middle west and eastern states. The rainfall is deficient in the southern part of the State, making irrigation necessary. During the summer in some districts the thermometer may rise to 100 degrees. These particular regions have mild winters, but in the mountains the winters are severe. The northern section of the State receives an abundant rainfall caused by the contact of the west winds with the mountains. The climate is most invigorating which makes for efficient work the year round.

Production and Industry. The chief industries of Idaho are lumbering, mining, stock-raising and farming. Idaho's most important timber consists in the red fir, white and yellow pine, tamarack, and cedar. One of the most famous lumber companies of the State, and the largest in the United States, is the one located in Potlatch. The State contains 19,317,373 acres of national forest.

The chief crops are cereals, potatoes, prunes, apples, apricots, pears, peaches, timothy and alfalfa. The most important crop is wheat, of which in 1932, the yield amounted to 14,996,000 bushels; spring wheat 15,660,000 bushels. Other important crops, with their production in 1932 are, alfalfa, 2,251,000 tons; oats, 5,476,000 bushels; barley 5,868,000 bushels; plums, 26,000 tons; sugar beets, 699,000 tons, and potatoes, 19,800,000 bushels. There is an extensive livestock industry, the number of horses on January 1, 1932, being 190,000; mules, 7,000; sheep, 2,274,000; milch cows, 247,000; all cattle, 668,000; swine, 351,000. The wool clip in 1931 was 19,419,000 pounds.

Minerals. The most important minerals in Idaho are gold, silver, lead, copper, coal, cobalt and building-stone. The gold production alone in the State has exceeded $300,000,000. The total value of the output in all minerals for 1930 was valued at $22,903,659. The largest lead and zinc mines are in the Coeur d'Alene district. The largest copper-producing district is located in Custer County. The value of the metal production totalled $27,626,000 in 1929.

The available water-supply is practically unlimited. The government reclamation service and private individuals are reclaiming vast tracts of dry land in the southern regions in the State by means of irrigation.

Transportation. There are eleven railroads serving the State, the most important being the Great Northern; the Northern Pacific; the Oregon Short Line, and the Oregon Railroad and Navigation Company. The Chicago, Milwaukee and St. Paul railway will also soon traverse the State. In 1932 there were 2,951 miles of steam railway and 121 miles of electric railway in the state. Most of the rivers are rapid mountain streams, consequently there is but little water transportation. The State maintains 4,788 miles of roads, 3,172 miles of which have been surfaced. Idaho has been connected with the Pacific Ocean since 1915, when the Celilo Canal on the Oregon side of the Columbia River was put into operation.

Population. According to the census of 1930 there were 445,032 inhabitants in the State. Of this total 129,507 were classed as urban, and 315,525 rural. Indian reservations cover an area of ninety square miles. The Indian population in 1930 was 3,915. The largest city was Boise with a population of 20,460. Other important cities are Pocatello, 16,471; Idaho Falls, 9,429; Lewiston, 9,403; Twin Falls, 8,787; Coeur d'Alene, 8,297, and Nampa, 8,206.

Education. The educational system is headed by the University of Idaho at Moscow. The faculty in 1933 numbered 172 with an enrollment of 2,373 students. The curriculum includes letters and sciences, agriculture, engineering and law, forestry, mines, and education. Schools are also maintained at Pocatello, Bannock County, Albion, Lewiston; and the School for the Deaf, Dumb and Blind at Boise. The public grades schools are well organized, Idaho from the very beginning watched over its educational projects with great foresight and generosity.

Government. Since the State constitution was adopted in 1889, over twenty amendments have been added. The legislature comprises a Senate of forty-four members, and a House of Representatives of seventy members, all of whom are elected for two years. There are also a governor and lieutenant-governor who both have a two year term of office. The legislature holds its sessions biennially. In 1919 the State was granted a consolidated form of government known as the cabinet or commission government by an act known as the Administration Consolidation Act. At the head of the Administration is the Governor. He has nine commissioners as his assistants each of whom is at the head of the following departments (1) Agriculture, (2) Commerce and Industry, (3) Finance, (4) Immigration, (5) Labor and Statistics, (6) Law Enforcement, (7) Public Works, and (8) Reclamation. The governor has the power to appoint and remove these commissioners except in the case of those whose terms are fixed by the Constitution.

A supreme court and district courts comprise the judicial system, the judges of both of which are elected by the people.

Male and female citizens twenty-one or more years of age who have lived in the State at least six months comprise the electorate. Idaho is represented in the National Congress.

History. The first white men to visit the region of Idaho were Lewis and Clark who traversed these regions in 1805-1806. Fort Hall was the site of the first permanent settlement. With the exception of a few fur traders there was a scanty white population in the territory before 1860. In that year gold was discovered at Orifino, and gold hunters rushed there. The Territory of Idaho was organized in 1863. It also comprised the region now occupied by Montana, Wyoming, and Idaho. The Oregon country, which was originally only partly Idaho, was claimed by the United States, Great Britain, Spain, and Russia. In 1819 when the Florida purchase was made, Spain transferred her rights to the United States, as did Russia in 1824. A treaty was signed between United States and England in 1818 by the terms of which they were to occupy jointly the Oregon region. However, in 1846 this joint occupation was ended by the establishment of the International Boundary at approximately forty-nine degrees north. Idaho Territory was organized from certain parts of the regions of Washington, Dakota and Nebraska in 1863. In 1864 and 1868, however, the territories of Montana and Wyoming left

Idaho with the boundaries it has to-day, and in 1890 it was admitted to the Union. Indians tormented early settlers of this region. The United States Government succeeded in pacifying the Indian population and settled them upon reservations.

Ida, Mount, a high mountain range in Asia Minor, extending from Phrygia through Mysia into Troas. Near its base was the city of Troy. From Ida as their source many famous streams flow, including the Granicus and the Scamander. Mount Ida is celebrated as the scene of many Greek legends. Situated in Crete is another Ida 8,055 feet high. Here Zeus, the chief god of the Greeks, was said to have been educated.

I'dol, an image made to represent a divine being and be adored as such. Worshipping such an object as a god is idolatry. To these images and the objects of nature, as the sun, the moon, the stars, air, water, fire and other elements, divine honors were given by the most ancient nations. Nature-worship or the worship of the various objects in the world around us may be traced to the Phœnicians, who made gods of the sun, moon and stars. The origin of animal worship can be traced to the Egyptians, who made gods of oxen, birds, crocodiles, serpents and still lower forms of animal life. Man-worship had its origin in Greece and Rome, and is familiar to us through their mythology. Among the chief gods of Greece were Zeus (Jove or Jupiter), the god of the sky; Neptune, the ruler of the sea; Apollo, the god of light; Mars, god of war. Idols most often are imitations of the human form in wood or stone, made colossal or monstrous to give added dignity or power. To savage minds the animal is the equal of man; so we sometimes find that their idols were grotesque figures, half-human and half-animal.

Idolatry (*ī-dŏl'ȧ-trĭ*), worship of images, or of anything not God. Idolatry is a Christian word which is used to indicate the worship of false gods or created things, and especially of images which are supposed to be the abode of a superhuman personality. Primitive peoples are especially given to idolatry as their minds are so formed that the worship of a "God of spirit and of truth" is very difficult. They live in a world of the senses, where they know only the material, the physical. They therefore materialize their gods in images of wood or stone, carved to represent the figure of the god, often ugly, even hideous.

Among almost all of the savage or primitive peoples, idolatry has prevailed. It is unknown, however, among the Hottentots, the Eskimos, the Bushmen, and the Fuegians. Yet great civilizations such as the Egyptian, Chaldean, Greek and Roman, have practised it as a definite phase of their advancing culture. It was a definite part of Indian religions, and nowhere more elaborately practised than in Mexico and Peru.

The Babylonian and Egyptian culture sharply affected the Hebrew, so that the nation was led during its early years into frequent individual and group idolatry. A striking Biblical instance is where Moses came down from the mountain after receiving the tablets of stone, and found the Israelites worshipping the golden calf that they had made. The Hebrew patriarchs were not entirely free from idolatry. When Rachel went from home as Jacob's wife she stole "the images that were her father's," hid them in the trappings of the camel and sat upon them so that Laban could not find them.

Idolatry is always accompanied by a more or less formal system of ceremonials which include bowing or prostration before the idols, offering of gifts and of sacrifices. In many instances this worship was the foundation of an elaborate ritual of ceremony led by priests. Almost any group idolatry maintained a priesthood, supplied by the offerings to the idols. Gifts varied from flowers and fruits of the field to rich treasures and great sums of money. Human sacrifice was not an uncommon occurrence. The great system of Hebrew worship ceremonial to Jehovah partook of the idolatry of the surrounding districts. There were burnt offerings and wave offerings, sacrifices of birds and animals in lieu of human beings. From the day that Abraham bound his son Isaac on the altar and lifted his knife above the beloved body, only to have his hand restrained and see a ram caught in the bushes as a substitute, the idea of the human symbolism in these sacrifices has held. The priest's garments, the gold and silver of the altar vessels, the rich adornment of tabernacle or temple, were all reflections of the beauty and precious value of the ornamentation of temples for idol-worship.

To-day idolatry still flourishes. An enormous number of idols are to be found in India, where the most celebrated in the world is the Buddha in the temple of Lhasa, Tibet.

Idyls of the King. Thus is the name given by Alfred Lord Tennyson, to twelve poems published between 1859 and 1872, which tell of King Arthur and his knights. The real Arthur seems to have been a leader of the ancient Britons after the Romans had abandoned the island. It is not certain whether he led them against the heathen Scots or against the heathen Saxon invaders. In any case he was finally defeated. The conquered Britons, who fled to the mountains of Wales and to Brittany in France, began to tell wonderful stories of his valor and goodness, and even fancied that he had not really died but would one day come again to give them victory. Later, the knights of chivalry, because Arthur had been a Christian fighting against heathens, adopted him as one of their heroes, and told stories even more wonderful about him; they fancied him a knight like themselves; and around his name there began to center a circle of stories in which many other knights appeared. These were then said to be King

Arthur's knights and members of the circle of the Round Table, where all sat on equal terms under their lord. These stories were written down by Geoffrey of Monmouth (1152) and by Sir Thomas Malory toward the close of the middle ages. Some of these stories praised the valor of the knights more than their goodness; but one class of legends, which told of the Holy Grail, exalted the purity and saintliness of the perfect knight. The Grail was a cup or a stone concerning which many conflicting stories are told; but all agree that it had marvelous properties which it revealed only to those who were perfect in heart and deed. Many sought to be worthy of it; but few attained that goal.

We have to understand how the stories of King Arthur came down to us, if we would understand Tennyson's treatment of the subject. He might have restored the memory of that ancient chief, "the gray king," whose name still is given to many a hill and ruin in Great Britain; or he might have gloried in the strength and the passion for adventure of all sorts which to the medieval knights seemed the best things in Arthur and his knights. Again, he might have sung of the Holy Grail, above all, and have exalted Arthur's saintliness. Other poets in England and Germany, Spenser, Swinburne and Wagner have done one or other of these. But Tennyson chose the noblest view of Arthur's character, and makes him the king who fought against brutality and misery in all their forms (compare Lowell's *Vision of Sir Launfal*). Hence it is that he calls these poems idyls; for an idyl now means a narrative poem, not so long or severe as an epic, less emotional than a lyric, elegant and exalted in style and plan, inspired by high and noble sentiment.

These 12 idyls form a unity. The first, the dedication to Prince Albert, the Consort of Queen Victoria, who had just died in 1861, sounds the keynote. The second tells of Arthur's birth, his winning the crown of Britain, his marriage to Guinevere and the solemn formation of the Table Round. Then follow four tales, the adventures of Gareth, Geraint and Launcelot and the misadventure of Merlin the magician. In each of these poems we see how men got from their king the stamp of nobility of soul; but in each successive poem we see more clearly the spiritual weakness of Arthur's followers, which must finally destroy his great work. In the seventh poem we perhaps reach the climax of the idyls; for here Galahad, the one knight worthy of Arthur, leaves his king and the world of action to pursue the sacred and wonderful Grail. And many of the best knights follow him; though for them the search must be in vain. The eight and ninth idyls deepen the shadows. The valor of the great Tristram wins him the prize of the tournament; but his treacherous lust brings him death. The tenth idyl tells the flight of Arthur's unworthy queen, Guinevere, and the breaking up of the Round Table. This is the saddest and most beautiful of the poems. Then Arthur, fighting his rebellious vassals, wins victory at the cost of life — for he dies to the world, being carried away to the island valley of Avilion, "where I will heal me of my grievous wound." The twelfth is the address to the queen, in which Tennyson explains his purpose in writing the poem.

We can see in what sense Tennyson would suggest that Arthur is not really dead. For has he not returned, healed indeed of his wound, in these very poems of Tennyson and in the ideal which is held up to men in Arthur's name? If we remember that to us our country is "the king," the vows to which Arthur bound his knights are not unworthy of our earnest consideration:

"But I was first of all the kings that drew
The knighthood-errant of this realm and all
The realms together under me their head.
In that fair order of my Table Round,
A glorious company, the flower of men,
To serve as model for the mighty world
And be the fair beginning of a time.
I made them lay their hands in mine and swear
To reverence the king as if he were
Their conscience, and their conscience as their king.
To break the heathen and uphold the Christ,
To ride abroad redressing human wrongs,
To speak no slander, no, nor listen to it,
To lead sweet lives in purest chastity,
To love one maiden only, cleave to her,
And worship her by years of noble deeds,
Until they won her."

Ignatius (*ĭg-nā'shĭ-us*), **Saint,** was bishop of Antioch about 69 A. D. He was said to have been a disciple of St. John. His surname was Theophorus, which means "one who carries God." There is a legend that he was the little child whom Jesus set in the midst of his disciples when he taught them the lesson of humility. All that is known with certainty about him is found in his letters to the churches, of which there are 12, called the Ignatian Epistles, though only a part are believed to be genuine . These letters were written on his journey to Rome. whither he had been sent to meet death by wild beasts, to which he had been condemned at Antioch. His martyrdom at Rome took place about 110 A. D. See *Apostolic Fathers* by Lightfoot.

Ignis Fatuus (*ĭg'nĭs făt'ū-ŭs*), a Latin term meaning vain or foolish fire. It presents the appearance of bright spots, usually found in marshy places and over stagnant pools. It is seen a little after sunset, like a pale, bluish flame, varying in size and shape; sometimes it shines steadily until morning, at other times disappears and reappears each half-hour. Observers have described it as a flame floating in the air, either close to the ground or a few feet above it. It is often seen as a fixed flame shining steadily, and at other times as a light in motion, bounding over the country. Its appearance is most common in the north of Germany, in the marshes of England and in the lowlands of Scotland. The cause of the strange light has been supposed to be the burning of the gassy vapor which arises from decaying vegetable matter, but this cannot be so, as this gas does not burn unless set on fire. Popular names for it are Will-o'-the-wisp and Jack-o'-lantern.

Igorrotes (*ē-gō̇r-rō'tās*), meaning "mountain people," a race of warlike Filipinos, largely of the Malayan type. They are chiefly confined to the island of Luzon. They show traces of Mongolian blood, due to the long-continued rule of the Chinese. They are to be distinguished from the black and dwarfish Negritos. The Igorrotes are an agricultural folk, famed for their method of constructing mountain-side terraces, irrigated by flumes and ditches. They live in villages of grass-roofed houses with wooden side walls. Some of the tribes are miners and workers in gold and copper.

Ilion (*ĭl'ĭ-ŭn*), a city in Herkimer county, New York, is situated on the Barge Canal. It is served by the New York Central and N. Y. C. & H. R.; West Shore railways and the Utica & Mohawk Valley Electric railway. Ilion is widely known for the location there of the Remington Typewriter and Remington Fire Arms plants. Other manufactures include library and office furniture, filing cabinets and knit goods. Historically it is known as the point from which General Herkimer advanced to relieve Fort Schuyler. The population in 1930 was 9,890.

Illimani (*ēl'yē̇-mä'nē̇*), one of the principal mountains of the Bolivian Andes. It is forty miles southeast of La Paz and is 21,181 feet in height.

Illinois, the name of a community of tribes of American Indians. They were related to the great Dakota family, which inhabited the territory now comprised in the state of Illinois and also tracts of land west of the Mississippi River. They were principally Algonquins. History tells us that they were a brave, warlike race, who aided the French in their Indian wars, and fought the Sacs and Foxes on their own account. La Salle called Lake Michigan Lac des Illinois. The Cahokias, after whom the pyramidal mound opposite St. Louis was named, were one of the tribes of Illinois Indians. There is now a small part of the tribe on a reservation in Indian Territory.

See INDIANS, AMERICAN.

Illinois (*ĭl-ĭ-noi'* or *ĭl-ĭ-noiz'*), one of the central states of the United States, and twenty-third in size, is situated in the heart of the middle west. It is bounded on the north by Wisconsin; on the east by Indiana; on the south by Kentucky and Missouri, and on the west by Missouri and Iowa. It is popularly known as the "Prairie State." The word "Illinois" is a combination of French and English, meaning "band of men." The State is 378 miles long and 210 miles wide, covering an area of 56,665 square miles, which includes 622 square miles of water.

Surface and Drainage. The surface of Illinois, as indicated by its name, "Prairie State," is a rolling grassy plain, broken by sloping hills and broad valleys, with numerous streams and timber belts. Originally this prairie was almost covered with forest, but now it is only ten per cent wooded. Illinois is situated in a glacial moraine, which accounts for its alluvial soil. The highest part of the State is in the northwest, where the land rises to 1,241 feet above sea level. That section, with the north and east central, is a ridged upland, intersected by the channels of streams. A low ridge of land stretches across the northeastern corner, separating Lake Michigan from the central part of the State, which is a broad valley, extending almost across the state in a southwesterly direction. This ridge serves as a divide to prevent the lake from flowing into the upper streams of the Illinois River. In the southern part of the State another line of hills, a spur of the Ozarks, crosses from the Ohio River to the Mississippi. The main part of the State, however, is so level that one railroad possesses a straight line of 100 miles in length, with scarcely a single dirt cut in it. Illinois is one of the most level states in the Union.

Illinois has a remarkable river mileage. Its waterways include 400 miles of navigable rivers, a waterway to the Atlantic through the Great Lakes, and the drainage canal which connects the Chicago River with the Desplaines, thus affording water transportation through the heart of the State as well as along most of its borders. The Mississippi, the Ohio, and the Wabash skirt its boundaries, and there is within the State, the Illinois River, besides many smaller streams. The rivers of the State number 275, many of them small streams only. There are no lakes of any importance or size, although a section of the State between Chicago and Wisconsin is dotted with small and lovely lakes, favorite resorts of the city-dwellers. The drainage is toward the southwest, into the Mississippi. The Illinois River, which has a southwesterly course of forty-five miles and is the largest river in the State, is formed by the junction of two streams about forty-five miles southwest of Lake Michigan, which is connected to the Illinois by the Chicago Drainage Canal. This Canal is a very important artificial waterway which supplies drainage from the flat coastal region around Chicago, taking it away from the natural outlet of Lake Michigan to the Illinois River at Joliet. This unique engineering project has been extended from Lockport to the Illinois at Starved Rock, and a nine-foot channel dredged in the river to the Mississippi. The first standard tow of barges entered Chicago from New Orleans on June 22, 1933.

The rivers of the State are lined with beautiful scenery. High wooded bluffs are a feature of portions of the Mississippi and the Illinois in particular. At Starved Rock, famous in Indian legend and history, there is a State Park of 900 acres. The Rock overlooks the Illinois River, and has a companion in the celebrated Lovers' Leap, also in the Park, which is beautiful with canyons, falls, wooded hills and rocky projections. Quincy is famed for its bluffs on the Mississippi, and the system of parks, including the Indian mounds. Other famed Indian mounds and burials within the State are located at Dixon and along the Illinois River. The Fox River is lined with beautiful scenery, as is the Rock River also.

Climate. Illinois has a very favorable climate. The extreme southern part of the State is warm, with mild winters, but the climate is more severe in the north. There are frequent sudden changes of temperature, and extremes of heat and cold. Illinois is far removed from the modifying influence of either the sea or the mountains. It is, however, affected by the trade winds from the Gulf of Mexico. The mean annual temperature of the State is 50.65 degrees, with a range from forty-seven degrees at the northern boundary to fifty-eight at the southern. There is sufficient rainfall for agriculture, diminishing northward from a mean annual precipitation of thirty-nine inches in the south to thirty-four inches in the north.

Minerals. Illinois ranks third among the states in mineral output. More than half the area of the State is underlaid by bituminous coal, which is the most important mineral deposit. These coal beds of the State are estimated to have an area of 42,900 square miles, and are the largest in any of the United States. More than one-half of the counties of the State have coal mines, but the veins in the southern section are thicker and more easily mined, therefore the production is greater there. In coal production, Illinois is outranked only by the states of Pennsylvania and West Virginia. In 1932, 32,360,000 net tons of coal were mined in the State. Oil and gas were discovered in Clark County in 1865. The petroleum output in 1932 was 4,661,000 barrels. Deposits of zinc and lead are very productive. In 1932, was produced 67,610 tons of slab zinc, and 731,872 gross tons of pig iron. Other mineral products include the glass sand of La Salle County, large quarries of limestone, sandstone, and clays, fluorspar and copper.

Production and Industry. Illinois is one of the richest agricultural states in the Union. The heavy black loam, which in the river-bottoms makes a vegetable soil forty feet deep, produces excellent crops. Soils are varied and fertile; climate has a wide range; waterways, railways, and highways afford easy transportation to markets, with a resultant diversified and profitable agriculture. In 1930 there were 214,497 farms in the State. The annual production of corn is exceeded only by that of Iowa, Illinois ranking as one of the greatest corn-producing states in the Union. The corn crop has an average of about 310,000,000 bushels each year; in 1917, when the World War had boosted prices and America was under pressure to furnish food for its own armies, to aid the allies and contribute to war relief, 418,000,000 bushels were produced. Cereals are the chief agricultural crops, with the following harvests in 1932: wheat 23,433,000 bushels; corn, 387,043,000 bushels; oats, 161,512,000 bushels; barley, 10,574,000 bushels. Rye and buckwheat are also grown, and potatoes are an important product. Other crops include hay and tobacco. The value of the principal crops in 1930 amounted to more than $281,000,000. There are many orchards, with apples, grown especially in the south, the chief crop; other common fruits are pears, peaches, grapes and berries. Nursery products are widely grown. The hardwood forests in the southern part of Illinois, where the Ozarks cross the State, are valuable sources of lumber. The State has a large stock industry, dairy farming and hog raising being especially important. There were 1,200,000 cows and 4,250,000 hogs in the State in 1930.

Manufactures in Illinois are very extensive. It ranks as the second most important manufacturing State west of the Alleghenies. It leads all others in slaughtering and meat-packing products, the Chicago Stock Yards being famous the world over. It also leads in the manufacture of agricultural implements. In 1929 there were reported 15,327 manufacturers employing 687,917 workers who earned $1,038,832,796 and produced goods valued at $6,232,438,498. Leading industries include steel mills and blast furnaces, foundries, machine shops, electric machinery, automobile plants, railroad car construction and repair, woodenware, furniture, lumber and planing mills, cement, clay products, soap, starch, fertilizers and canned vegetables. Industrial centers are well scattered over the State, and all districts are productive.

Transportation. In 1932, Illinois had the heaviest railway transport tonnage in the United States, although second to Texas in railway mileage with 12,476 miles. Chicago is the greatest railway center in the world. All the great railway systems from the east enter the city, and from it radiate all the trains with central lines to the Pacific Northwest and California. Thirty-four trunk lines converge in Chicago. There are about 1,421 miles of electric railway in the State radiating from important centers, such as Danville and Chicago. Traffic on the Great Lakes is huge, with a large fleet of steamers engaged in trade between the lake ports. There are 450 miles of canals. Illinois ranks first among the states in hard roads, one of the most famed being the Lincoln Highway, which crosses the State from Chicago Heights to Clinton, Iowa, a distance of slightly more than 154 miles.

Population. The population of Illinois in 1930 was 7,630,654, an increase of 17.7 per cent over that of 1920. During this decade the negro population of Chicago doubled; and there was an increase of eighty per cent in negro population over the state. The total population in 1930 included sixteen per cent foreign-born whites, of whom 15.6 per cent were from Germany, 14.2 per cent from Poland, 9.1 per cent from Sweden, 9.1 per cent from Italy, 7.1 per cent from Russia, with the majority of the remainder from Czechoslovakia, Ireland, England, Canada, Austria, Norway and Scotland. The urban population was 73.9 per cent of the whole, and the negro population 4.3 per cent. Chicago, the largest city, had a population of 3,376,438. Other important cities, with their 1930 populations, are: Peoria, 104,969; Rockford, 85,864; East St. Louis, 74,347; Springfield, the capital, 71,864; Cicero, 66,602; Oak Park Village 63,982; Evanston 63,338; and Decatur 57,510.

Education. In Illinois, education is free and compulsory for children between seven and sixteen years of age. For the year ending on June 30, 1931, there were 11,976 public elementary school districts with an enrollment of 1,086,692 pupils, and 11,839 teachers; 963 high schools with 320,170 pupils and 11,839 teachers. There are five State normal schools which had in 1931 an enrollment of 14,313 teachers, and a faculty of 545. The total expenditure on public schools was $134,502,656. There are fifty-three institutions of higher learning in the State. The University of Illinois, founded in 1867, at Urbana, Illinois, had in 1933 an enrollment of 12,875 students, and a faculty of 1,345. The University of Chicago, non-sectarian, founded in 1892, had 12,382 students and 790 professors. Next in order of size are Northwestern University at Evanston, founded in 1851, with a 1933 enrollment of 8,195, and a faculty of 748. Loyola University, a Catholic institution in Chicago, founded in 1909, enrollment 3,675 and faculty 480; and De Paul University, also Catholic, in Chicago, founded in 1898, enrollment 5,267 and faculty 181. There are 479 benevolent institutions within the State, many of them partly or wholly educational, as the School for the Deaf. The penal charitable institutions are controlled by a Commission of five members, with auxiliary boards in each county. These institutions are highly advanced in their methods of treating patients, every possible means of curing them being employed, often with remarkable results.

Government. Illinois is divided into 102 counties, with the capital centrally located at Springfield. The Legislature consists of a Senate of fifty-one members elected for four years and half renewed every two years, and a House of Representatives of 153 members elected for two years. The sessions are biennial. The State is divided into fifty-one districts, in each of which are chosen one Senator and three Representatives. Each elector casts three votes for Representatives, one for each of three candidates, one and a half for each of two, or all three for one. Illinois is represented in Congress by two Senators and twenty-seven Representatives.

History. Illinois was first discovered by two French explorers, Father Marquette and Joliet, in 1673. They had rediscovered the Mississippi and entered the Illinois River, finding the Kaskaskia Indians near Starved Rock in what is now La Salle County. Joliet returned in 1679, with La Salle and Tonti, to visit this fertile region, then a great prairie with grasses and blooming flowers shoulder-high, and heavily wooded districts. La Salle built a fort near the present site of Peoria in that year. In 1680, La Salle and Hennepin established Christian Missions for the Indians. The names of these early explorers and missionaries have been perpetuated within the borders of the State. The towns of Joliet and La Salle are especially well-known. Fort St. Louis was established on Starved Rock in 1682. The French retained the territory until 1763, when it fell into British hands, through the Treaty of Paris. The first settlements had been made by the French, Kaskaskia being the first permanent settlement. It was established in 1700. The first American settlers came from Virginia, which for a time claimed possession of the whole of the northwest.

The change from French to British control led to serious trouble with the Indians, which lasted through the Revolutionary War. In 1779, George Rogers Clark came into the region from the south and drove the Indians from their strongholds in southern Indiana and Illinois. The State became United States territory in 1784. Three years later it became a part of the Northwest Territory, and in 1809 it was made an independent territory, including Wisconsin, Minnesota and Michigan. On December 3, 1818, Illinois was admitted to the Union, a state with a population of 50,000.

The Indians had continued to give trouble in the northwest, which was not ended until the Black Hawk War of 1832. In 1840 the State was disturbed by an uprising when the Mormons were driven out from Nauvoo, the town they had founded, and the surrounding territory. The Lincoln-Douglas debates were famous preceding the Civil War, in which Illinois was represented by Abraham Lincoln himself, and 206,000 men, including some outstanding officers. In 1893 the World's Columbian Exposition was held at Chicago. The State was thrown into upheaval the following year by the railway strike at Pullman, during which President Cleveland sent Federal troops to guard the mails at Chicago. During the World War, the State contributed approximately 163,000 volunteers and 188,000 drafted men, an exact total of 351,153 soldiers. Training centers were at Camp Grant, Rockford, Lake Bluff, and Fort Sheridan, for the army; Great Lakes Naval Training Station for the navy; Rantoul and Belleville for aviation. In 1933-

34, A Century of Progress was held at Chicago, attracting visitors from all over the world and aiding to overcome the business lethargy of the time.

See Century of Progress; Chicago.

Illinois River, the largest river in the state of Illinois, and the most important tributary of the Mississippi. It is formed by a union of the Des Plaines from Wisconsin and the Kankakee from Indiana, and flows 435 miles before reaching the Mississippi. It is navigable for 245 miles from its mouth. The chief branches are the Fox and Spoon Rivers on the north and the Vermilion, Mackinaw and Sangamon Rivers on the south and east. It is now connected with Lake Michigan through the Chicago Drainage Canal. It is proposed to open a deep-waterway through this canal and the Illinois and Mississippi Rivers, from the Lakes to the Gulf, and thus to the Panama Canal. Of its drainage area of 29,013 square miles, 24,726 square miles lie in the State of Illinois and the rest in Indiana and Wisconsin.

Iloilo (*ē'lō-ē'lō*), a coast town, capital of the province of the same name, is situated on the southeast coast of the island of Panay, Philippine Islands. It was, until the American occupation, one of the three ports at which foreign vessels might make entry and take cargo. The fortified harbor is safe but shallow, so that vessels must load and discharge by means of lighters. Products of Iloilo include jusi, lime, vinegar, pina, machinery, hats, and vehicles. It exports sugar, tobacco, rice, coffee, and dyewoods. After the cession of the Philippines to the United States, the Spaniards surrendered Iloilo to the Filipinos who were besieging it. The place was soon captured, however, by the United States forces. The population was estimated at 47,808 in 1928.

Illyria (*ĭ-lĭr'ĭ-ȧ*), the Greek name of an ancient country that extended north from Epirus along the eastern shore of the Adriatic Sea. The exact boundaries are unknown. For years the Illyrians indulged in intermittent warfare upon the early Macedonian kings. Amyntas II was forced to pay them tribute, and Perdiccas was slain in 359 B. C. Rome fought Illyria in 229 B. C., and again in 219 B. C., subjugating the country. Illyria, however, could not remain submissive. In 169 B. C., Rome was forced to fight again. Rome defeated Illyria and incorporated the entire country within its own republic, although the unconquered spirit of the people drove them to frequent revolt. They were actually civilized at the point of the sword. In 35 B. C. Illyria became a Roman province, and from its people later came several Roman emperors, including Claudius II, Aurelian, Diocletian and Probus.

During the period of dissolution of the western empire, the Illyrian spirit was almost crushed and its civilization destroyed. The Goths, the Huns, and several Slavic tribes overran the country in succession. Part of the Illyrians fused with the Huns, and part with the Slavs. Still others were driven south, where one tribe still survives in name at least —the Albani in the modern Albanians. In 1809 the name was revived when Napoleon organized the territories he had taken from Austria into the Illyrian provinces. In 1816 they became the Kingdom of Illyria under Austrian rule again. Not until 1849 did the term vanish, when the Illyrian kingdom was divided into the provinces of Carinthia, Carniola, and the Coastlands. The people in those provinces to-day are Slavs, Germans and Italians. The native Illyrians, who were so nearly related to the Thracians, have vanished. They are probably represented by the Albanians of to-day.

See Albania.

Imagination, a term ordinarily used to indicate creative power of the mind. Psychologists commonly employ it in a somewhat more limited sense to mean the reproduction, in more or less original combinations, of the impressions received from the senses. They distinguish imagination from memory proper or memory in the narrow or technical sense of the term, in that the latter involves in addition to images a consciousness that these represent some specific experience in one's own past life. We can imagine the North Pole, but memories are possible only of places where we have been. Imagination is usually classified as reproductive or productive, according to whether its content is simply a reproduction of a past experience or a new construction. It is probable that these types differ in degree of originality rather than in kind. All images usually differ from the impressions that they reproduce in definiteness, vividness and feeling of reality. They also commonly involve some difference in the arrangement of the colors, sounds, forms or objects presented. When these differences become so great that we seem to have an entirely new concrete situation presented, we say that we have productive or creative imagination. The materials of creative imagination, such as colors, forms, sounds, tastes, and odors are, however, all derived from sense-experience. One born deaf cannot in the psychological sense imagine sound. He might try to do so, but his image would be based on those sensations that he himself is capable of getting. Men differ very much not only in vigor but also in kind of imagination. Some image sights especially well, others sounds, others again touches, tastes, odors or motor-sensations. A good, all-around imagination often occurs. The value of imagination, especially of sights or sounds, is great. It enriches the mental life, making it more complex, resourceful and interesting. The practical use of this lies in that, when new situations are presented with which the habits of the individual are unable to cope, imagination comes to the rescue with alternatives. A farmer with imagination, when one crop fails, thinks of the possibility of raising others or of different uses for his land. An imaginative mechanic is not at a loss when his machine breaks down Imagination calls up other experiences than the habitual ones, getting from them suggestions that may prove fruitful when the routine ways of acting fail. Thus it constitutes the proper reaction of a resourceful mind in the case of a crisis. When the images are very definite and vivid, and especially when we recall in memory the experience from which they sprang, we gain the additional advantage of being able to judge more accurately the probable success of the line of action suggested by imagination. A milliner who can clearly picture the hat that her imagination suggests, or remembers similar hats, is helped in anticipating whether or not her creation will prove a success.

Imagination is governed by the laws of association of ideas (*q. v.*). Its cultivation, therefore, depends on enriching the experience of the child and, especially, on increasing the associations by virtue of which these experiences will be recalled when needed. Modern methods of teaching (*q.v.*), aim especially at such associations and also at developing the self-reliance and resourcefulness of the child. As imagination is the original,the experimental factor in the mind, so too close an insistence that its products shall conform to truth or taste or practical excellence may check its spontaneity and leave the pupil critical but not productive. See Association of Ideas, Memorizing and Teaching, Method of. Consult Ribot's *Essay on the Creative Imagination.* (Open Court Pub. Co.)

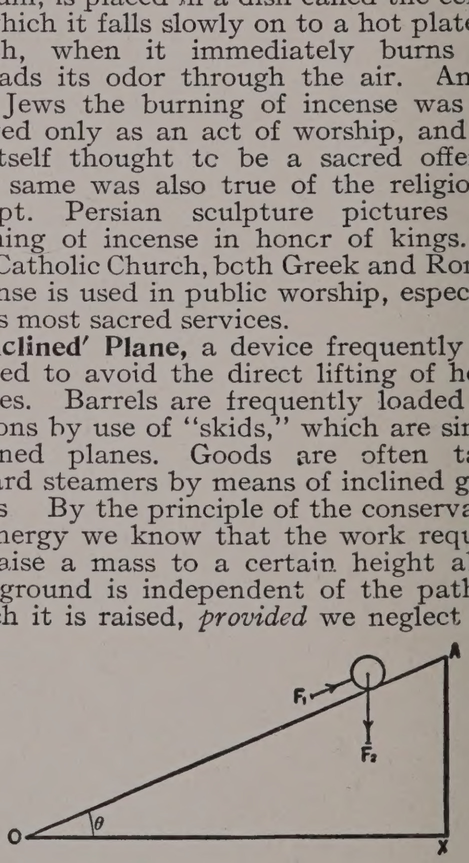
Immigration Bureau. This bureau, now under the direction of the Secretary of Labor, was organized in 1819 in the Treasury Department, from 1903 to 1913 conducted under the Secretary of Commerce, and since 1913 under the Department of Labor. It is charged with administering laws regulating the admission of immigrants and the exclusion of the feeble-minded, the insane, persons likely to become a public charge, those afflicted with contagious diseases, chronic drunkards, criminals, contract laborers, alien enemies and persons over 16 who are unable to read. It is also charged with the distribution of immigrants among the states desiring immigration and of gathering and distributing among the new arrivals information regarding the resources, products and physical characteristics of the different states.

Im'mortelles' or **Everlasting Flower,** a kind of plant whose flowers do not change in color or appearance in drying. They may be kept for years without losing their beauty. Several kinds of everlasting flowers are frequently seen in our gardens and others in greenhouses. The French call them *immortelles*, and in France they are often woven into wreaths and placed beside recent graves as emblems of immortality.

Impeach'ment is the name applied in England and the United States to a special form of trial, by which high state-officials can be called to account for their manner of managing the interests committed to them. In England the house of commons presents the charges and prosecutes the case. The house of lords acts as judge, and the accused may be defended by counsel. In the United States the house of representatives makes the accusation; the senate, with the chief-justice of the supreme court presiding, acts as judge. The trials are for "treason, bribery or other misdemeanors." In the various states the legislatures can also bring an action before the state senate against any state officer. In England members of parliament can be impeached; but in the United States only the civil officers of the government are subject to trial. The most noted cases of impeachment are those of Judge Samuel Chase in 1804 and President Johnson in 1868 in the United States and in England that of Warren Hastings.

In'cense, a perfume much used by the ancients in their religious worship. It was produced by burning sweet-smelling substances, like gums, balsams etc. The material, generally a mixture of several kinds of gum, is placed in a dish called the censer, in which it falls slowly on to a hot plate beneath, when it immediately burns and spreads its odor through the air. Among the Jews the burning of incense was employed only as an act of worship, and was in itself thought to be a sacred offering. The same was also true of the religion of Egypt. Persian sculpture pictures the burning of incense in honor of kings. In the Catholic Church, both Greek and Roman, incense is used in public worship, especially in its most sacred services.

Inclined' Plane, a device frequently employed to avoid the direct lifting of heavy bodies. Barrels are frequently loaded into wagons by use of "skids," which are simply inclined planes. Goods are often taken aboard steamers by means of inclined gangways By the principle of the conservation of energy we know that the work required to raise a mass to a certain height above the ground is independent of the path by which it is raised, *provided* we neglect friction. Let F_1 be the force required to push the body along the incline O A in fig. 1, and let F_2 be the weight of the body. If the length of the slope O A be X_1 and the



THE INCLINED PLANE

vertical height X A be X_2 then by the conservation of energy $F_2 X_2 = F_1 X_1$

$$\text{or} \quad {}^{F_2}\!/_{F_1} \quad {}^{X_1}\!/_{X_2} = \frac{1}{\sin^0}$$

where θ=angle A O X which measures the steepness of the inclined plane. The mechanical advantage of the inclined plane is, therefore, $^1/\sin\theta$. This statement is sometimes called the law of the inclined plane.

Income Tax, a tax upon the income of individuals. It is levied by a government and is usually collected annually. It may be levied directly against the individuals receiving the income, or it may be collected from the income at its source, as a tax upon dividends, interest on bonds, etc. As a matter of public policy small incomes are exempted usually. For the same reason, the so-called graduated or progressive income tax is generally used, the rate increasing as the income increases.

The income tax was introduced into England as a purely fiscal expedient. The great cost of the Napoleonic wars made it necessary to levy an income tax in 1799. With a short intermission this remained in force until the close of hostilities. In 1842 it was again revived and since then has remained a part of the taxation system of Great Britain.

In the United States, Secretary Dallas advocated an income tax during the War of 1812. During the Civil War such a tax was adopted in 1862 and remained in force for ten years. The Sixteenth Amendment to the Constitution, which was ratified on February 25, 1913, gives Congress authority to "lay and collect taxes on incomes, from whatever source derived, without apportionment among the several States, and without regard to any census or enumeration." A law taxing incomes was incorporated in the Tariff Act of October 3, 1913.

The rate of income tax has varied under succeeding enactments of the Congress. A summary of the income tax section of the Revenue of 1932 follows:

Individual—The normal rates of the law are four per cent on the first $4,000 net, and eight per cent on the remainder; the surtaxes begin with one per cent on net income between $6,000 and $10,000 and rise to a maximum of fifty-five per cent on net income over $1,000,000; individual exemptions are lowered to $1,000 for single and $2,500 for married persons who are heads of families; $400 is still allowed for each dependent. There is no credit for earned income.

Corporation—The corporation rate is increased from twelve per cent to 13¾ per cent; the former credit of $3,000 granted smaller corporations is eliminated. An additional tax of three-fourths of one per cent is imposed on consolidated returns of affiliated corporations.

Income taxes have been imposed at various times by about one-half of the States, and many of them are still in force. Twelve States tax both personal and corporation income; four, personal income only; three, corporation income only.

India, a central region of Southern Asia, composed of British provinces and protected Native States or Agencies. British provinces extend over an area of 1,094,220 square miles. The Indian Empire covers an area of 1,805,332 square miles. India has long been celebrated for its riches and valuable natural products. The inhabitants were early civilized and exhibited remarkable taste and skill in the manufacture of the most costly merchandise. India is bounded on the north by Afghanistan, Nepal, Bhutan, and Thibet; on the east by China, Siam and the Bay of Bengal; on the south by the Indian Ocean, the Bay of Bengal and the Arabian Sea, and on the west by the Arabian Sea, the Indian Ocean, Persia and Afghanistan.

Surface and Drainage. The physical features of India are so varied and interesting that its surface has been called "an epitome of the whole earth." There are lofty mountains covered with perpetual snow; broad and fertile plains bathed in tropical sunshine; arid wastes and impenetrable forests. Its great natural divisions are the sub-Himalayan countries, the plain of the Ganges, the plain of the Indus, the highlands of northern Hindustani, and the southern peninsular portion. The Himalayan (meaning "the abode of snow") consists of a chain more than a thousand miles in length, along which tower lofty peaks ever covered with a snowy crown. The highest of these peaks is Mount Everest, the loftiest mountain in the world (29,141 feet). About twenty per cent of the entire area of India is forested.

The principal river of India is the Indus which flows out into the Arabian Sea after a course of 1,700 miles. Its source lies in the Himalayas. In the northeast the Jumna and other tributaries of the Indus form part of the Bengal delta and drain an area of about 500,000 square miles. The three other important rivers of India are the Ganges which empties into the Bay of Bengal (1,540 miles in length); the Brahmaputra, which also empties into the Bay of Bengal (1,680 miles); and the Irawadi in Burma which, after a course of 1,250 miles, flows out into the Bay of Bengal. Torrents of rain fall, not on the plains or the southern plateau, but on the mountain slopes, thus swelling the Ganges and the Brahmaputra greatly.

Climate. The country as a whole has three well-marked seasons—the cool, the dry, and the rainy, the most important of which is the rainy season or the season of the southwest monsoon (periodical winds). The dry season is also known as the season of the northeast monsoon. For centuries India has suffered from famines, caused chiefly by the occasional failure of the monsoons. In recent years, however, the danger of famine has been considerably reduced by means of improved transportation and extensive irrigation.

India's central tableland is comparatively cool, a climatic condition seldom found throughout the rest of the country. Rainfall varies greatly throughout the various sections of the country, the heaviest fall being in the northeastern regions where the rainfall frequently exceeds seventy-five inches. In the great triangular plateau of the Deccan and the upper basins of the Ganges and the Indus the rainfall is about thirty inches, while in lower regions of the Indus, it is often less than fifteen inches.

Minerals. India abounds in minerals and precious stones. In 1931 there were 22,065,000 tons of coal produced; 11,500 tons of copper ore; 1,624,883 tons of iron ore; 1,072,418 tons of pig iron; 625,148 tons of steel ingots; 89,000 tons of lead ore; 74,785 tons of lead; 537,844 tons of manganese ore; 45,300 tons of zinc; 1,839,400 tons of salt; 330,400 ounces of gold, and 5,923,005 ounces of silver. One of India's most valuable products is petroleum. In 1932 the petroleum production totalled 8,430,000 barrels. Among the precious gems of India are the ruby, diamond, garnet, agate and amber. Bauxite, gypsum, corundum, graphite, Fuller's earth and bismuth are also found throughout the country.

Production and Industry. India is essentially an agricultural country. Approximately seventy per cent of the population eke their living from the soil. Until recent years methods of agriculture were extremely crude, but the British Department of Agriculture has maintained a staff of agricultural experts in an effort to modernize this industry. Since 1932 an area of 45,000,000 acres has been supplied with water by means of the great Lloyd (Sukkur) barrage across the Indus River in Northern India. The barrage was opened on January 13 of that year by the Viceroy. Its cost of construction totalled $75,000,000. The new dam makes possible the conversion of the parched Sind Desert into a fertile field. Much has been accomplished in India toward extending irrigation. In the Punjab district are the new Sutley Valley irrigation works, constructed at a cost of $55,000,000 which will irrigate 5,108,000 acres. The first unit of this project was opened on April 12, 1926. In Madras the Convery Mettur project has been developed, and in Bengal the Damadar Canal Irrigation scheme. Both projects were put into operation in 1932.

In British India 228,160,535 acres were under cultivation in 1930. Of this total area, 51,010,126 acres were under water, 26,727,540 acres of which were irrigated by canals.

The chief crop is rice, the production of which in 1932 totalled 32,770,000 tons. Other important crops, with their productions in 1932, are wheat, 9,026,000 tons; sugar cane, 3,880,000; cotton, 4,064,000 bales; jute, 5,566,000 bales; tea, 394,084,000 pounds; rubber, 20,117 pounds; and ground nuts, 2,697,000 tons.

According to the livestock census of 1930, there were, in British India, 1,701,000 horses; 75,000 mules; 1,380,000 donkeys; 526,000 camels; 31,645,000 buffaloes; 122,985,000 oxen; 25,540,000 sheep, and 35,943,000 goats.

There were 249,154 square miles of forests in 1930, 107,353 square miles of which were "reserved forests" under the direct control of the State Forest Department with an additional 6,298 square miles "protected."

The principal manufacturing interests are cotton and jute weaving. Other important manufactures include wool, silk, shawls, carpets, wood-carving, metal-working, sugar, lumber, and paper.

Transportation. In 1932 there were 42,813 miles of railways in India, 31,489 miles of which were State owned. The development of railways, however, has not followed along modern lines. Four gauges are used which prevents the interchange of cars from one line to another. The railway staff in 1932 was composed of 4,516 Europeans and 725,703 Indians. There are about 4,000 miles of navigable waterways inland and approximately 200,000 miles of highways. There were 114,609 registered passenger automobiles in India in 1931. India and Ceylon are connected by rail and steamer ferry. The steamers ply between Dhanushkodi Point on Rameswaram Island and Talaimannar in Ceylon.

Population. In 1931 the total population of India was 351,399,880, an increase of 32,513,900 or 10.2 per cent over that of 1921. Of this total 270,561,353 resided in British Provinces and 80,838,527 in Native States and Agencies. The majority of the population are Hindus, there being 238,330,912 such inhabitants. Other religions represented include 7,774,928 Moslems; 4,306,442 Sikhs; 4,961,794 Christians; and groups of Jains, Buddhists, and Parsees. India is a country where the caste system prevails. Approximately thirty per cent of the population is composed of the so-called depressed caste, the "Untouchables." There are at least 147 different languages spoken throughout India, the most important being Hindi, Bengali, Telugu, Marathi, Tamil, Punjabi, Rajasthani, and Kanarese.

The capital city is New Delhi, which in 1931 had a population of 447,442. Other important cities, with their populations in 1931, are: Calcutta, 1,485,582; Bombay, 1,161,383; Madras, 647,230; Hyderabad, 466,894; Lahore, 429,747, and Rangoon, 400,415.

Education. Two types of educational institutions prevail in India: (1) those in which the curriculum conforms to the standards prescribed by the Department of Public Instruction or by the Universities or Boards of Secondary and Intermediate Education and either undergo inspection by the Department, or regularly present students at the public examinations held by the Department, Universities or Boards. Such institutions are termed 'Recognized,' although they are frequently under private as well as public management. (2) The second type of school does not fulfill these requirements. Such schools are therefore classed as 'Unrecognized.'

'Recognized' schools include Primary schools and Secondary schools. Schools of India are divided into English and vernacular institutions and high and middle schools. The colleges of the country are affiliated to eight universities, Calcutta, Madras, Bombay, Punjab, Patna, Nagpur, Andhra, and Agea. Six unitary teaching and residential universities are also maintained—Allahabad, Lucknow, Rangoon, Dacca, Delhi and Annamalai. A Hindu university is situated at Benares which was founded in 1916. The Muslim University is situated at Aligarh (1920). In 1931 there were 227,189 'recognized' institutions in British India with an enrollment of 12,056,837 pupils. In this same year there were 34,879 'unrecognized' schools which were attended by 632,249 pupils.

Government. India is today governed in accordance with various Parliamentary Statutes now consolidated in the Government of India Act, 1915, as amended by the Government in 1916, 1919, 1924 and 1929. Both civil and military control are vested in the Governor-General in Council, appointed by the Crown and usually holds office for a five-year period. The seat of Government, since 1912, has been at Delhi. The new Capital at New Delhi was completed in December, 1929. The formal opening, however, did not take place until February, 1931.

The Indian Legislature consists of the Governor-General and two Chambers, the Council of State and the Legislative Assembly (opened in 1921). The first Chamber is composed of sixty members, thirty-three of whom are elected and twenty-seven nominated. The Legislative Assembly is composed of 145 members, 104 of whom are elected, forty-one nominated and twenty-six official members.

Members of the Governor-General's Executive Council are appointed by the Crown. It is required that three of these members have had ten years' service in India and at least one member of the Council must be a barrister or pleader of not less than ten years' standing.

The government of India in England is under the control of a Secretary of State for India who is assisted by a Council of not less than eight nor more than twelve members.

History. India's early history dates back to the Aryan invasion about 1000 B. C., bringing in the Sanskrit language and the Vedic religion. The Persian invasion under Darius occurred in 518 B. C., and the Grecian invasion under Alexander the Great in 327 B. C. In 1001 A. D. the country was overrun by a horde of Mohammedans. The Mongol invasions under Genghis Khan and Tamerlane ended in the Mogul Empire in 1525, Akbar the Great being perhaps the greatest sovereign India has ever known. After his death in 1707 the Empire was soon divided. European nations appeared first in India as travellers, traders, and missionaries. The Portuguese, the Dutch and the French made such settlements early in the eighteenth century.

In 1653 the British East India Company settled in India, establishing three trading settlements at Calcutta, Madras and Bombay. British power dates from the Battle of Plassy in 1757, Clive's victory over the Mogul which gave Great Britain the dominion of Bengal. The company was chartered by England and sustained by British troops. With each renewal of the charter the British Government assumed more control. The annexation of territory continued without check, except in 1838, when the effort to establish a British protectorate in Afghanistan was a failure. In 1857 occurred the Indian Mutiny with its massacre of English residents at Cawnpore and other sections throughout India. In 1858 the government passed into the hands of Great Britain and the British East India Company ceased to exist. British territory has been strengthened by the wars of 1878 and 1884 with Afghanistan and Burma.

Since the close of the World War there has been an increasing demand from the Indian population for self-government. Mahatma Gandhi came into the limelight of Indian affairs in 1920 when he began his 'non-cooperation' movement, which was followed a short time later by his 'non-violence' agitation. By September, 1932, Gandhi had won his fight against separate electorates for the 'Untouchables.' In this as in most of his later struggles Gandhi resorted to the "fast" as his weapon in gaining a victory.

One of the most catastrophic earth quakes recorded in recent years swept over Northern Bihar, India, on January 15, 1934, and laid waste a vast area which extended over 135 miles in length. Casualties were estimated at about 10,000. The greater part of the damage wrought by the earthquake was centered in the region lying between Calcutta and Delhi. The natives were hurled into a panic as buildings crumbled and the sand and water wrecked both homes and crops. At Jamalpur alone, a railway station and one hundred other buildings were completely destroyed. Cawnpore and Benares suffered similar disaster. Three of the most important towns in Nepal, Patan, Bhatgaon and Katmandu, were almost totally destroyed.

British troops have proved most helpful in aiding the stricken natives. Reconstruction has already been put under way in the devastated regions, a task which will be an enormous cost to the government. Temporary dwellings are being constructed for the throng of people throughout the stricken area. It has been estimated that at least twelve towns were destroyed by the quake and must be rebuilt. Mahatma Gandhi has been engaged in securing help for the wasted regions. He was but recently made chairman of the Central Relief Committee, an unofficial organization. Relief funds have also been started in London where the Lord Mayor made an appeal to Londoners to aid India's sufferers. Despite the aid being offered the natives, they are still in a pitiable plight since the majority of the inhabitants in the devastated area are agriculturists and the soil from which they gained a livelihood has been so disrupted as to make its cultivation impossible.

The need of constitutional reform in India has long been recognized. Towards this end Great Britain submitted the White Paper, the Government's plan for a new government in India. That plan of the British Government has been subjected to long discussion. One of the most urgent problems confronting India is that of finance. On February 27, 1934, Sir George Schuster presented the Indian budget which disclosed a surplus of nineteen lakhs of rupees (approximately $600,000). The distinct improvement noted in this budget is accounted for in the outflow of gold and the discontinuance of gold hoarding. The budget was favorably received in the Legislative Assembly. Plans are now being considered to employ revenue obtained from excise taxes to improve health conditions, educational facilities, and to establish "model" villages throughout India. An attempt will be made to instill new life into the villages and the "panchayats," the village councils. The program for social progress aims at destroying illiteracy and building a strong nation. Mahatma Gandhi, who has long been conducting a campaign of passive resistance against the British Government has in recent months been confining his work to charity and the cause of the "Untouchables."

India Rubber or **Gum Elastic,** a substance found in the milky juice of certain plants in the tropical and subtropical countries. Some of the properties of India rubber were known in America at a very early period, for it is related by travellers as early as the second voyage made by Columbus that the Haitians made balls of the "gum of a tree," which bounced better than the wind-balls of Spain. Indians of South America used latex, a milky white fluid, for waterproofing cloth. They had discovered that by mixing sulphur with the latex a more satisfactory product resulted.

Latex is a viscid milky juice secreted by certain vessels of seed bearing plants. Oftentimes various oleoresins and poisonous compounds are found in the different kinds of latex. To-day latex has taken a permanent hold on the textile industry. It is generally believed that latex is composed of rubber hydro-carbon globules suspended in an aqueous solution. These globules are in continual Brownian movement.

Rubber and latex are becoming increasingly important in trade and industry. Rubber is rarely used in its pure state. In its vulcanized state, however, it has been made available for many purposes. The vulcanizing process was discovered by Charles Goodyear. It consists in heating the pure rubber with the sulphur which hardens it. It is used in making shoes, cloth, belting, automobile and bicycle tires, hose, washers, combs, chains, bracelets, paper-knives, rails and paving. One of the widest fields for latex is in the packaging of food products. Latex coatings for paper containers are already on the market. Research is now being carried on to perfect a coating suitable for containers for liquids such as olive oil. Thin strips of latex crepe have been on the market as adhesive wrapping, such as those used in bandaging operations. A more recent development is elastic webbing which has been treated with latex solutions. This webbing has retained the adhesive qualities of latex and also permits air to penetrate. Latex has also been used in the manufacture of plaques, toys, raincoats, and even shoes. In addition to its already wide use, latex has many interesting possibilities.

Rubber has been used extensively in the building of the Zephyr, the articulated, high-speed train of the Chicago, Burlington and Quincy railway. It has been employed in insulation for noise and shock besides its regular uses in packing, hose and other mechanical applications.

The new noiseless street car which was demonstrated on the street railway lines in the city of Chicago during 1934, was equipped with fifty-six rubber parts.

A London concern has recently worked out several processes which involve the use of rubber combined with hair for upholstery purposes. The new material has been found to be quite durable. One of its interesting features is that the material may be used either with or without spring, and once moulded will hold its shape indefinitely.

On April 28, 1934, rubber producing countries throughout the world agreed upon a restriction agreement which has since regulated both the production in and export of rubber in these countries. The principal object of such an agreement is to reduce existing stocks to a normal figure, to control both supply and demand, and to maintain a fair and equitable price level which would be reasonably profitable to efficient producers of rubber.

In December, 1933, manufacturers in the United States used 29,087 long tons of crude rubber. Most of this rubber was used in the manufacture of rubberized cloth and sheeting, footwear, toys, electrical goods, automobile tires and packing.

In March, 1934, British Malay led the entire world in gross exports of rubber, by exporting 58,515 long tons of the material.

See Rubber.

Indiana (*ĭn-dĭ-ăn'ȧ*), one of the North Central group of the United States, and the smallest of the western states. It is 275 miles long, 140 miles wide, and covers an area of 36,350 square miles. It is the thirty-seventh state in size, and is popularly known as the "Hoosier State." The State has Michigan and Lake Michigan as its boundaries on the north, Ohio on the east, Illinois on the west, and Kentucky, separated by the Ohio River on the south. Indiana is divided into ninety-two counties, with the capital, the city of Indianapolis, near the center of the State. The chief cities are Indianapolis, Evansville, Fort Wayne, South Bend and Terre Haute.

Surface. The greater part of the surface of Indiana is undulating to rolling prairie land. A range of sand hills lies toward the north, and a chain of rocky hills called the "Knobs," some of which rise to a height of 500 feet is situated in the south. The northern part of the State originally was swampy, but since its drainage the soil is fertile. The central region is somewhat rolling, and the southern part slightly hilly. Much of the lowland was at one time a swamp, but since drainage has taken place now is the source of growing vegetables. In the northeastern part of the State numerous small lakes have become summer resorts. Botanists have become particularly interested in a sandy dune region bordering on Lake Michigan. This particular portion has distinctive flora. The southern portion of Indiana is drained by the Ohio and its tributaries. The Wabash River, which forms its western boundary for 100 miles, crosses the State. In the northwest in the Kankakee, which drains into the Illinois, and in the northeast are the St. Joseph and St. Mary's Rivers, which unite at Fort Wayne and become the Maumee.

Climate. The mean annual temperature is about fifty-two degrees varying from forty-nine degrees in the north to fifty-four degrees in the south. The summers are generally warm and quite hot in the southern part of the State. The winters are cold in the northern region, but they are mild in the southern portion. Occasionally winter winds from the Great Lakes region send the temperature down as low as twenty-five degrees below zero. Rainfall varies from thirty-five inches in the north to forty-six inches in the Ohio valley. This rainfall, however, is not evenly distributed throughout the year, making July and August dry months.

Minerals. Coal, iron, ore, sandstone, gypsum and natural gas comprise the State's mineral wealth. Indiana ranks seventh in the union in the production of coal. The coal field is situated in the west and southwest regions. It produced 12,400,000 net tons in 1932, 14,295,000 in 1931, and 16,490,000 in 1930. In 1886 natural gas was discovered in the east-central part of the State. Much industrial and commercial activity followed, but the output is now rapidly declining. The development of a petroleum field followed the discovery of natural gas but like the latter, it has declined. Petroleum production in 1932 amounted to 804,000 barrels; in 1931, 840,000 barrels, and in 1930, 994,000 barrels. Pottery, clay, Portland cement, building stone (the most famous is Bedford limestone), gravel and mineral waters are among Indiana's vast mineral resources.

Production and Industry. Agriculture is an important industry in the State. Since the Wabash valley is one of the world's most fertile regions, the yield of wheat and corn is tremendous. The most important productions are wheat, corn, barley, rye, potatoes and tobacco. Many horses, sheep, cattle and hogs are raised. There is an important manufacturing district along the southern shore of Lake Michigan, comprised of a group of cities —Hammond, East Chicago, Indiana Harbor, Gary and Michigan City. The principal manufactures are steel, iron, carriages, wagons, plate-glass, plows, railroad cars, office desks, and machinery. Other important industries are flour and grist-milling, slaughtering and packing, clayworking and brewing. Several well-known motor cars are manufactured in Indiana. South Bend has the largest wagon works in the world. A number of cities produce textiles of cotton and wool and large printing and publishing interests are located at Hammond and Indianapolis.

Transportation. There are 7,420 miles of railway in the State. Extensive traffic is conducted over Lake Michigan and the Ohio and Wabash rivers. There are 1,597 miles of electric railway. All the lines from the East to Chicago, and almost all of the great transcontinental systems, traverse Indiana. Electric interurban traffic is the heaviest in the country. All regions of the state, except some of the southern countries, have fine transportation facilities. There are approximately 5,440 miles of state highway, 42,698 miles of county road, and 31,383 miles of township road in the State. Facilities for water transportation are fairly well. Improved harbors are located at Indiana Harbor, Michigan City, and Gary on Lake Michigan. Considerable improvement in the building of roads has recently been effected.

Population. The population of the State is evenly scattered between farmlands and cities. In the year 1910, the population was 2,700,876; in 1930, 3,238,503. The percentage of urban population was 55.5 as compared with 50.6 in 1920, showing a steady drift of population toward the cities. The principal cities are Indianapolis with a population of 364,161; Fort Wayne, 114,946; South Bend, 104,193; Evansville, 102,249; Gary, 100,426; Hammond, 64,560; Terre Haute, 62,810; East Chicago, 54,784; Muncie, 46,548; Anderson, 39,804; Elkhart, 32,959; Kokomo, 32,843; Richmond, 32,493; Mishawaka, 28,630; Michigan City, 26,735; Lafayette, 26,240, and New Albany, 25,819.

Education. Indiana has maintained a high standard in the field of education, having always stressed educational projects, and making ample provision for the support of schools. Each county has its superintendent, who in turn is under the supervision of a state superintendent. Indiana has a total school population of 761,494. The State has 9,197 schools, and 17,305 teachers. Among the many educational institutions are the State University at Bloomington; De Pauw University at Greencastle; Purdue University at Lafayette;

the University of Notre Dame, the largest Catholic institution in the west; Hanover and Wabash Colleges at Hanover and Crawfordsville, and Rose Polytechnic Institute at Terre Haute. Teachers receive their training at two State Teachers' Colleges at Terre Haute and Muncie. The annual amount expended for public schools is over $70,000,000. Culver Military Academy at Culver, Indiana, is one of the most famous private military schools in the United States.

Government. In 1851, the State adopted its present Constitution. A Senate of fifty members elected for four years, and House of Representatives of 100 members elected for two years comprise the legislature. Senators must have attained the age of twenty-five years, and Representatives that of twenty-one. Sessions of the legislature convene once every two years, and sessions cannot last longer than sixty days. A governor elected for four years, a Secretary of State, attorney-general, auditor, treasurer, and superintendent of public instruction, elected for two years, comprise the executive department of the government. A supreme court, appellate court, circuit court and a system of county and justice courts form the judicial department. The larger cities have established juvenile courts. Two senators and thirteen representatives represent the State in the National Congress. The capital of the State is Indianapolis.

History. In 1679 La Salle explored the region now called Indiana. Almost sixty-five years later a number of French families made the first permanent settlement at Vincennes. The French controlled the region until after the French and Indian War, after which it was surrendered to the English. At the time of the Revolution, Vincennes and Kaskaskia were captured by Americans under George Rogers Clark and given over to the colonies. In 1783 all the territory east of the Mississippi and north of Florida was ceded by England to the United States. In 1800, the Territory of Indiana was organized, including the area now in Indiana, Illinois and Michigan. In 1805 Michigan was separated, and 1809 Illinois left the ranks. Since that year the boundaries of Indiana have remained unchanged. After the close of the American Revolutionary War, the Indians became extremely hostile. In 1794, however, the United States troops defeated the red men and Indian warfare ceased for a number of years. Indiana was admitted to the Union as a State in 1816. One of the most famous men associated with the history of the State of Indiana is William Henry Harrison, who served as President of the United States.

Indianapolis (*ĭn-dĭ-ăn-ăp'ō-lĭs*), the capital and largest city of Indiana, and the seat of Marion County, is situated on the west fork of the White River, 109 miles west of Cincinnati, and 185 miles southeast of Chicago. It is almost centrally located in the state, and very nearly in the center of the corn and wheat belts of America. It is the center of the nation-wide railway systems, seventeen lines converging here, as does the greatest electric railway system in the United States. There are six airports. Indianapolis covers an area of about fifty square miles, and is the world's largest city not situated on navigable water. It is the largest inland industrial, commercial and transportation center in the United States.

This city is beautiful, regularly built with a plan of streets radiating from a central circle, like the spokes of a wheel. From the Soldiers' and Sailors' Monument in the center of this circle the view over the city is inspiring. It is noted for its 800 miles of wide, well-paved and shaded streets. There are many handsome structures in the city, along its imposing thoroughfares.

The Soldiers' and Sailors' Monument honors the rôle played by Indiana in the wars of the American Union. The War Memorial Plaza forms a central area of public buildings and grounds seven blocks long, the principal edifice being a shrine, fifty feet square and 230 feet high. Within this Plaza are the National and permanent headquarters of the American Legion. The Capital building and Court House are among the most outstanding edifices of the city. There are several libraries, including the Indiana State Library and Raub Memorial Library, the latter being unique in its English architecture and setting in extensive gardens. The Children's Museum is one of five in the United States, and the only one having Junior directors. The Indiana State Museum contains nearly 90,000 specimens. There are eighty-six public school buildings, thirty parochial, and many private schools and academies. The medical college which occupies a forty-acre tract, is a department of Indiana University. Other higher institutions include Butler College, Indiana Central University, the Benjamin Harrison Law School, Indiana Law School, Indiana Dental College, the John Herron Art Institute and several schools of music. The laboratories of Eli Lilly and Company are situated here in a group of twenty-five major buildings. There are twenty-six parks and forty-seven recreation centers, making a total of 3,000 acres.

The trade in agricultural and packing products is large. The stock-yards alone cover 200 acres. There are 917 manufacturing concerns producing 1,000 different articles. The principal industries include automobiles and automobile bodies, serums, food products, silk hose, grain and cereal products, flour mills, cotton and woolen mills, canned goods, printing and publishing, and foundries and machine shops.

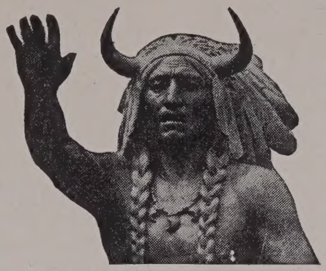
Indianapolis is governed by a mayor and a city council of nine members, elected one from each of six councilmanic districts, and three at large. School affairs are separate from those of the municipality controlled by a Board and financially supported by special taxes under the State Law.

The site of the city was chosen in 1820,

THE RED CHILD OF THE FOREST

PAST AND PRESENT

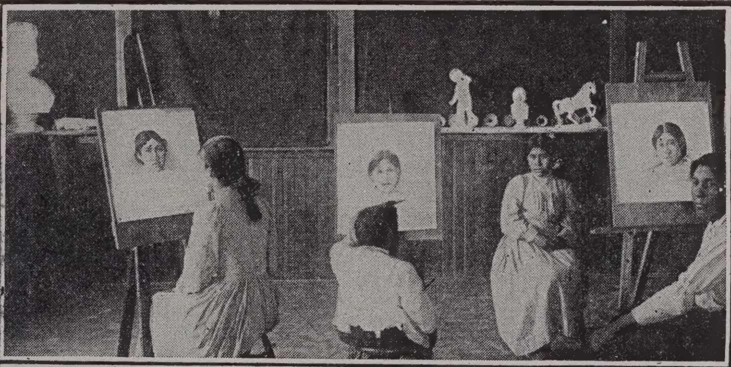
THE Indian medicine man thought he could cure disease by frightening away the evil spirits supposed to cause it, so he wore horns and other things to make him look savage. What is this medicine man wearing that used to belong to Brother Bear? Indians, when they live in wigwams, believe in medicine men, as Eagle Heart did, but most Indian children now go to school and know better. The two center pictures show the boys and girls studying art and manual training at the Indian school at Carlisle, Pa. In the summer the boys and girls at Carlisle are allowed to work on neighboring farms where they can earn a little money and learn how farming is carried on. Our government has established a number of Indian schools and keeps them up at a cost of several million dollars a year.



From the Statue by Dallin.

THE MEDICINE MAN

"She hung the baby and cradle and all from her shoulders."



Some tribes wrap up their babies in buckskin bags.

These are wigwams like that in which Eagle Heart was born. They are made of the skins of wild animals.

when the plain was covered with a dense forest. A legislative commission selected this site for the capital in 1821, and the legislature adopted the name Indianapolis for the city founded in that year. It was incorporated in 1847 as a city, the year in which the first railroad in the State was opened. Indianapolis pioneered in filter plants in the United States. The first municipal water supply and sewer system was constructed in 1870 to 1875. A new filter system was completed in 1904, and in 1925 a Sewage Treatment Plant installed. The population of Indianapolis in 1930 was 364,161.

See INDIANA.

Indian or **Malay Archipelago** is the most important system of island groups in the world. It is bounded on the north by the China Sea, on the east by the Pacific, south and west by Australia and the Indian Ocean. There are three principal groups, the first comprising the Molucca Islands, Spice Islands and the Philippines; the second including Sumatra, Java and the Sunda Islands; the third being made up of Borneo, the Celebes and smaller islands. The chief islands for trade are Java, Sumatra, the Moluccas and Borneo. Native rajahs or princes rule over several of the islands, which are inhabited by Malays, but most of the islands belong to the Dutch and British. The main products are sugar, coffee, indigo, rice and tea. Gum elastic, resin, pepper, rattans, drugs, ivory and opium are also exported. Fine timber trees abound, and the vegetation is most luxuriant. The islands are mountainous, and remarkable for the number of volcanoes, both active and extinct. The highest peak is Kinabalu on Borneo, which rises to a height of 13,455 feet. Exclusive of New Guinea, the total area of the archipelago is about 745,000 square miles, with an estimated population of 50,000,000.

Indian Mutiny, or the **Sepoy Rebellion**, a revolt of the native troops of India in 1857-58. Discontent and unrest had long been seething in India against the dominance of British authority, the annexation policy of Great Britain, and the rapid introduction of European improvements, all of which preyed upon the fears and superstitions of the natives, and particularly upon the native troops who were vexed over the existing military situation. They were further antagonized in the early part of May, 1857, when several of their comrades were imprisoned for their persistence in refusing to handle greased English cartridges. The insurgents succeeded in liberating their comrades and immediately set about massacring the Europeans who dwelt nearby. In the insurrection which followed, Delhi fell into the hands of the revolting troops. One of the most ardent supporters of the mutiny was Nana Sahib of Bithur, who had presented his claims as the adopted son of the Peshwa of the Mahrattas, only to have those claims remain unrecognized by the British government.

Fanned by the enthusiasm of Nana Sahib, the mutiny raged on and spread rapidly. Toward the end of June, 1857, General Wheeler was forced to surrender to the Indian leader at Cawnpore. The mutineers had promised their prisoners safe conduct to Allahabad, a promise which was never fulfilled for the men were immediately massacred. On June 30, the insurgents besieged Lucknow and in their attack upon the Europeans in the residency, fatally wounded Sir Henry Lawrence, the British commandant. Inglis immediately succeeded him in that capacity and served until relieved by the daring Havelock in September of that year. It was in July, 1857, that Havelock marched upon Nana Sahib from Allahabad shortly after the latter's massacre there of the women and children. This time Nana Sahib met defeat and Havelock entered Cawnpore.

In spite of the rapidity with which the rebellion had spread, the British forces had successfully quelled the uprising soon after Havelock and Sir Colin Campbell had come to relieve the cities. By November of that same year the British were again in control of Lucknow and Delhi. By June of the following year, the revolting troops held not a single city or fortress of any importance.

Indian Ocean, one of the five great divisions of the universal ocean and the third in size, lies south of Asia, between Africa, the Antarctic Ocean, Australia and the Indian Archipelago. It has an area of 29,340,000 square miles. Its greatest depth is 22,968 feet, in the northeastern part, where it is estimated that 50,000 square miles have a depth of over 18,000 feet. The mean depth is about 2,300 fathoms, slightly greater than that of the Atlantic. The ocean gradually narrows from south to north, and is divided by the peninsula of India into the Bay of Bengal on the east and the Arabian Sea on the west, the latter branching off again into two arms, the Persian Gulf and the Red Sea. In early history the Indian Ocean was known as the Erythræan Sea. The Phœnicians were familiar with this ocean at a very early date, and, as a channel of commerce by the navies of King Solomon, it came to be the first ocean crossed for trade. In the ninth century the Arabs made frequent voyages across this ocean, crossing the Bay of Bengal into the China Sea. Many small islands dot its waters, but the only large ones are Madagascar and Ceylon. The Euphrates, Tigris, Indus, Ganges and Irrawaddi Rivers, all large rivers of Asia, and the Zambezi from Africa flow into the Indian Ocean.

Indian Religions, the religions of India, which has from earliest time been a country of many religions. The most vital thing to a native of India is his religion; caste and creed produce the greatest problems of the land. The majority of the people are Hindus or Brahmans: next in number are the Mohammedans. These religions are practised by approximately ninety per cent of the people of

India. There are also many nature-worshippers, Sikhs, Jains, Parsees and Christians.

The religious development of India began with the Vedic era, which comprised the earliest beliefs of the Aryan Hindus. Brahmanism followed, a faith inculcated by the priests in the religious *Brahmanas* and the philosophical *Upanishads.* Then followed the great reforms of Buddhism and Jainism, each of which marks a revolt against the decadent Brahmanism. Following these came the newer Hinduism, or the Brahmanic counter-revolution, a wider, more universal faith growing out of the previous double reform; and lastly, the Hindu sectarian outgrowths and the popular faiths. The earliest period has literary representation in the *Rig-Veda* and the *Atharva-Veda;* the priest-Brahmanism is portrayed in the *Yajur-Veda. Pali* gives the Buddhistic reform, *Prakrit* the Jainistic. The later stages have their voice in *Mahabharata* and *Ramayama,* with the more recent *Puranas* and *Tantras.* The last of these periods ended in 1500 B. C.

Indians, The American, the name given to the people found in North and South America when discovered by the Europeans. They were called Indians because the newly found land was supposed to be a part of India. These scattered tribes, while varying in civilization from the rudest savages to the cultivated Aztecs of Mexico, and Incas of Peru, are now thought to belong to the same race. They are brown or copper-colored, with straight black hair, high cheek bones, head rather square and flattened behind. Their origin is uncertain, although all the tribes have traditions of an early emigration from some region either north or south. The most civilized tribes when America was discovered, were those found from New Mexico to Peru. They had buildings of which remains are still found; while the northern Indians dwelt in tents or other movable buildings. All the tribes were hunters and fishers, raising a few crops, as corn, beans, and tobacco. They made pottery, stone pipes, arrowheads, snow-shoes and bark canoes and baskets. The Pueblo Indians of New Mexico built towns and temples. The Mexican and Peruvian tribes had modes of keeping records. They were governed by chiefs, who sometimes were made such by inheritance and sometimes by merit. They believed in a future life, and carefully buried their dead. In South America and Mexico the Indians have largely mingled with the conquering races, and are much less distinct from them than in the United States. The Indian wars of the United States began in Virginia in 1622 and in New England in 1637, and continued at intervals, with many victories by the Indians and terrible massacres of the whites; but in the long run with the sure defeat of the savage by the arts and arms of civilization. The Indians have been steadily pushed westward, and have been deprived of their lands by treaties, which have again and again been broken.

Many tribes successfully recorded their history and traditions by means of pictographs, the best known of which are the Walam Olum of the Delaware and the Kiowa calendars. The Cherokee tribe alone invented and developed an alphabet by which they recorded their literature. Indian mythology and literature is as varied as the wide extent of Indian tribes. The myths of the northern tribes are few and simple and animistic in nature. Those of the north Pacific Coast resemble the Norse sagas. The tribes of the southwest produced almost genuine epic literature, particularly the Zuni Indians, while the eastern tribes developed myths similar to European fairy stories.

In 1492, it has been estimated that there were 846,000 Indians in America. By 1865 their number had been reduced to 294,574. In 1930 the total Indian population in the United States was 332,397. Oklahoma has the largest Indian population of any state in the Union. In 1930 there were 92,725 Indians settled upon reservations in that State.

Wheeler-Howard Bill. For more than sixty years the American Indian problem has perplexed the Federal Government. Since 1871, when the Indian became a ward of the government, the white man's exploitation of the Indian has steadily increased. During these long years vain attempts have been made to adapt the members of this land civilization to the industrialized life of the white man. Prior to 1871, the Indian was permitted to dwell on reservations in accordance with the terms of the treaties between the government and the Indian, under which he, although conquered, was treated as a member of an independent nation. When, however, these Indian lands became attractive to the white man, the treaties were violated and the Indian removed to less productive lands. In 1887 the General Allotment Act was passed which divided the reservations into small individual farms. The Indian might either will or sell his farm, providing, of course, the procedure was agreeable to the Indian agent. The white man continued to be attracted to Indian lands, and his increasing exploitation gradually reduced the Indian to the status of a pauper. The first hint of the injustice being heaped upon the members of a civilization and culture which artists, historians and archæologists have long extolled, and the dire need of a change of policy in Indian administration which must eventually be adopted, was uttered in 1928 by Senator La Follette of Wisconsin. In 1934 the pressing demand of this change in policy has been heeded.

The Wheeler-Howard Indian Rights Bill was presented to the 73rd Congress for consideration by the House Committee on Indian Affairs. It embodies a "comprehensive plan" to halt the exploitation of the Indian and to prevent the extinction of the race. The Commissioner of Indian Affairs, John Collier, developed the principles involved in the bill aimed at reforming the Indian land policy and restoring the Indian to his old tribal life. A conference was held in Washington in January to approve the new governmental policy. The proposed Indian legislation includes the following principles:

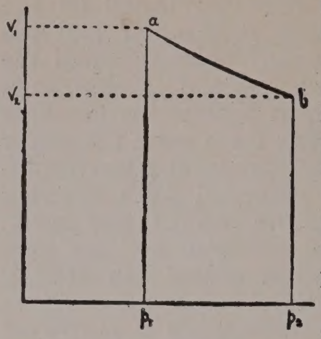
> "That the provisions of the land-allotment system which require or permit the transfer of Indian tribal lands to individual Indians and the sale of such lands by individual Indians to non-Indians shall be immediately repealed.
>
> "That the laws of descent and distribution now applicable to Indian lands should be modified so as to prevent the breaking up of Indian lands into parcels unsuitable for economic use and to prevent the growing inequalities in land distribution among individual Indians and to promote community ownership and control of Indian lands.
>
> "That a process of land acquisition be set up by which so far as feasible allotted lands will be restored to community ownership, especially forestry and grazing lands, and additional lands will be acquired (a) to provide land for landless Indians, and (b) to consolidate Indian lands for economic purposes; to provide for equitable distribution of land-use privileges and community income; to prevent alienation or dissipation of capital assets; and to provide a system of Indian credit for land and industrial development."

Although the Wheeler-Howard bill proposes the restoration of self-government and tribal life to the Indian race, it does not propose the cessation of government health, educational and welfare services to the Indian. These services are indispensable to the Indian if he is to "stand on his own feet in a competitive society." Suffrage was granted the Indian in 1924, but that franchise did not bestow upon the Indian the inalienable rights of a citizen. He remained a ward of the government, subjected to a "federal absolutism which deprived him of all voice in Indian affairs." The proposed legislation strikes a poignant blow at this principle of Indian administration.

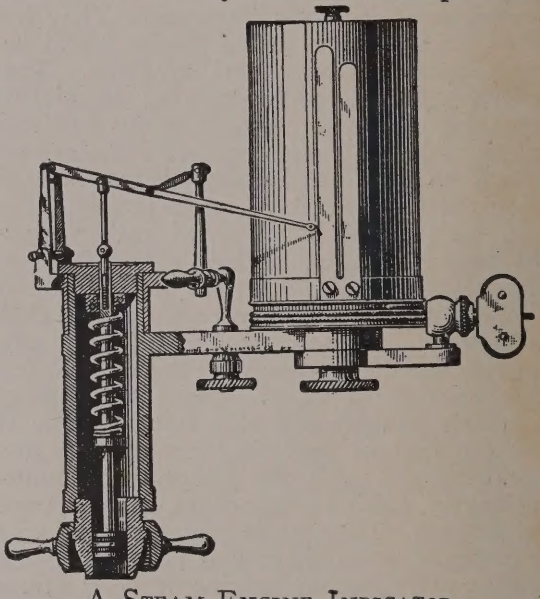
It is not to be expected that such an extensive reform program will not meet with opposition, indeed vehement opposition from those who have enjoyed the exploitation of the Indian. Lengthy discourses have already been heard on the new policy, both upholding and denouncing its principles. The Indians themselves have gathered about council fires to discuss the legislation. The program is stoutly endorsed by many organizations which have long sought reform. Among the latter are the Indian Rights Association; the National Association of Indian Affairs; the Ojisto Council, and the National Council of American Indians. One of the chief advocates of the bill, the American Indian Defense Association, declares "that it throws the torch of self-government back to a race which once excelled in self-government, and that it offers a practical way to achieve economic stability without which the remnants of the tribes cannot be saved from extinction."

Indian Territory. See OKLAHOMA.

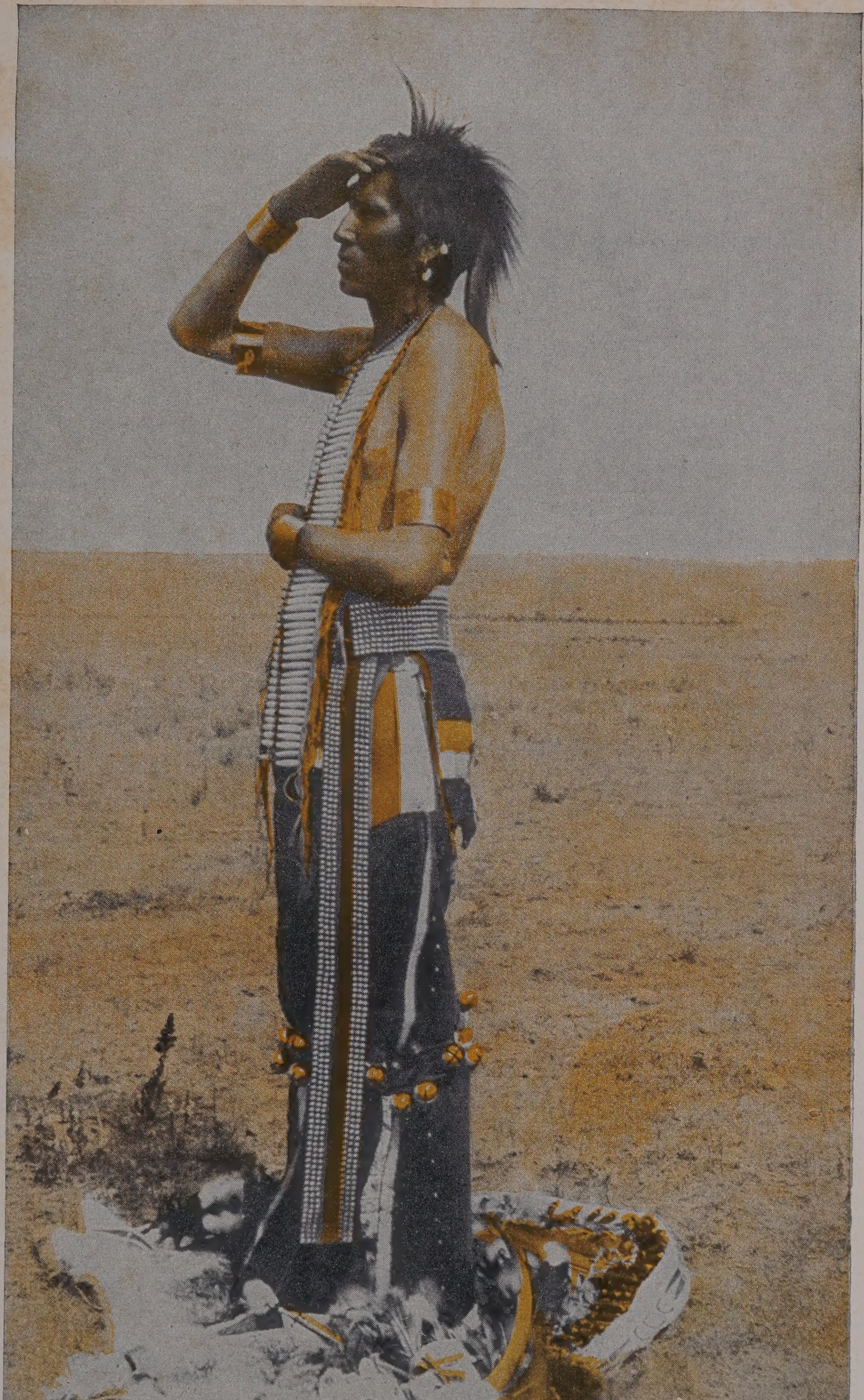
Indicator (steam-engine), an instrument for drawing automatically a figure showing the instantaneous expansions and also the corresponding pressures of the steam in a steam engine cylinder. The figure is called an indicator diagram. The expansion of the steam multiplied by the pressure gives the work the steam is doing. By letting vertical distances represent volumes, the area of the figure equals average pressure times change of volume or area equals work done.



The common indicator is due to Richards. It consists of a small cylinder which can be connected to the cylinder of the steam-engine. The pressure of the steam acts on the piston in the indicator cylinder and compresses a spiral spring. The amount of this compression is indicated by a pointer and measures the pressure. The pointer moves up and down with the changes of pressure, tracing a line on a paper wound on a small drum. This drum is attached to the piston-rod of the engine, so that it rotates backward and forward with the motion of the piston. But the position of the engine piston gives the volumes of the steam in the cylinder. The pointer thus traces a figure in which horizontal changes represent expansions or changes in volumes, and vertical distances represent changes in pressure. The indicator diagram is used to study the performance of the valves of an engine and also to calculate the work the steam is doing. This is called indicated power as distinguished from brake power, which is the power deliv-



A STEAM-ENGINE INDICATOR



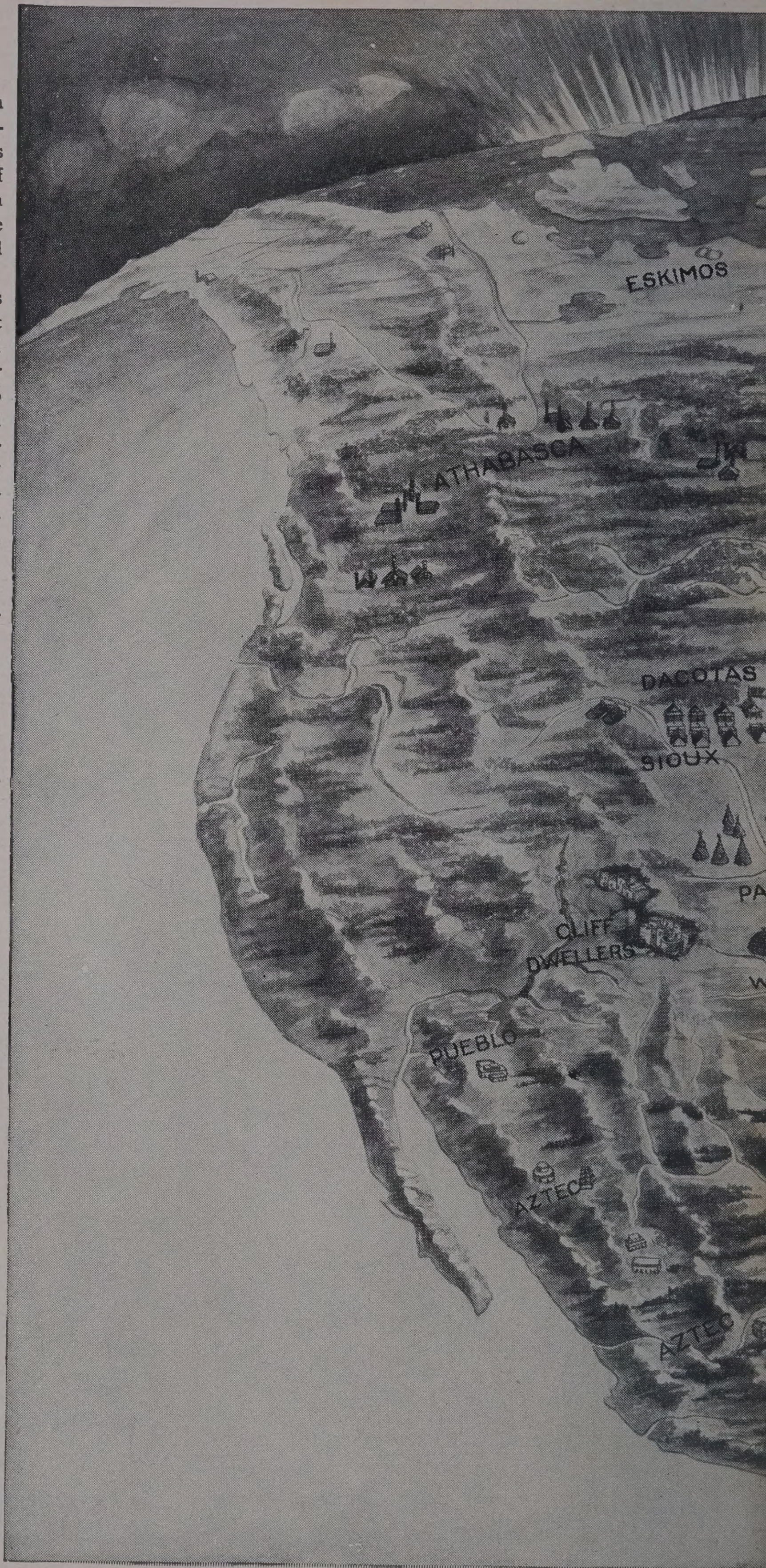
CHIEF YELLOW BOY GIVING THE PEACE SIGN
Note that he has dropped his cartridge belt and war bonnet at his feet.

THE HOMES OF THE REDMEN

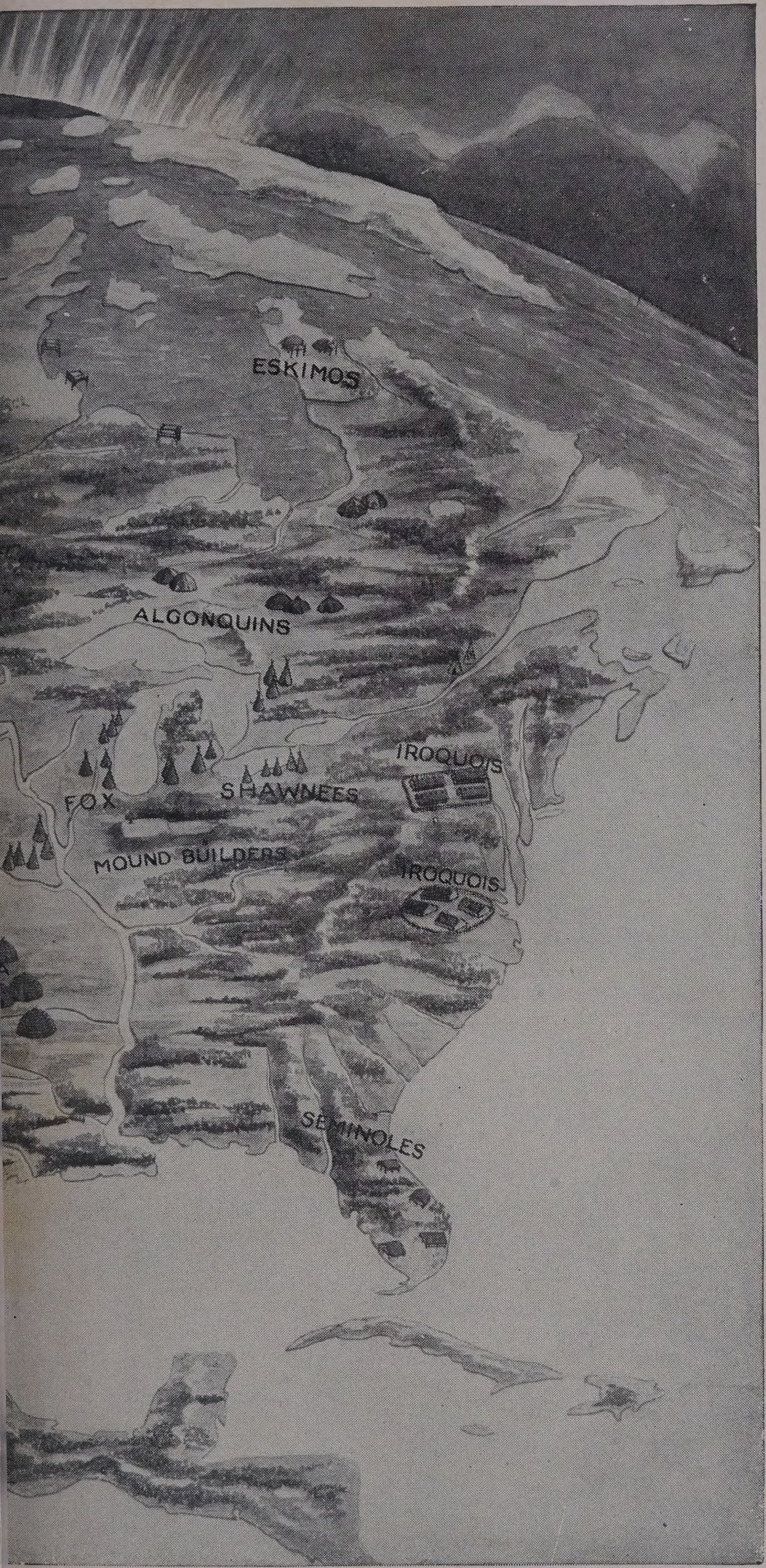
You are looking down on the scattered world of Indians as it existed in this big wild North America of ours before the white man came. On the extreme north are the Eskimos and on the south the Aztecs. The different nations, as you can see, had different styles of architecture and built according to their needs. The Indians who lived in the Arctic and Temperate regions had comparatively simple dwelling places and erected no temples to the gods they believed in because they were obliged to be constantly on the move to secure their food, which consisted largely of game.

The Eskimos built snow houses in the winter time and lived in dug-outs in the summer months. During the fishing season they lived in box-like houses built upon stilts. Indians in Alaska and Canada built quite substantial houses of planks.

The Aztecs and the Mayas who lived in the warm climate of Mexico and Central America, on the other hand, were not obliged to keep moving all the time, and so not only developed an architecture much more elaborate than those of other Indians, but an architecture that ranks among the most interesting in history. The cliff dwellers also had a more highly developed architecture than other Indians because for protection against their enemies they remained in one place—the region of the cliffs, and so they also had time and opportunity to develop their style of building.



N AMERICA WAS A WILDERNESS



The Algonquins lived in round houses furnishing shelter for as many families as the log houses of the Iroquois. Indians throughout Kansas and wherever the long grass was abundant, built houses of woven grass supported by a frame work of saplings.

The Iroquois, you see, built log houses and enclosed their villages inside of a stockade. As you would suppose, from a look at these houses, the Iroquois were considerably more advanced than Indians like the Pawnees, Shawnees and Foxes, who lived in wigwams.

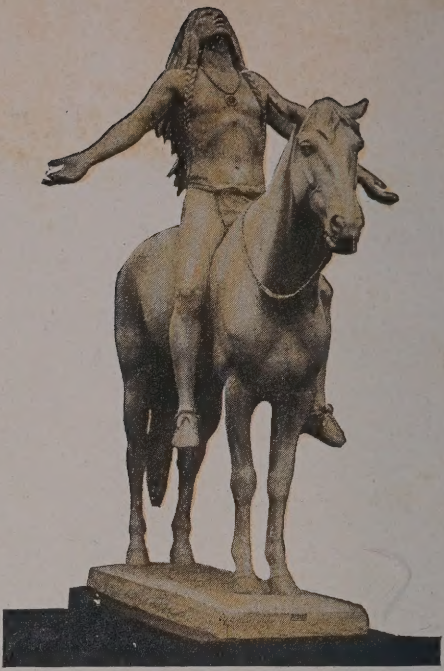
The Prairie tribes, as a rule, built their cone-shaped wigwams with saplings fastened together at the top and covered with buffalo hides. The Dakota Indians, however, although a prairie tribe, had more substantial dwellings in their permanent villages, in addition to the wigwams used in the hunting season.

The mound builders had their homes in the Mississippi Valley and in other parts of North America, but these mounds were found most extensively in Ohio, Indiana, Illinois and Missouri. Little is known of them except what the contents of the mounds reveal. One theory is that they are the ancestors of more civilized Indians found in the southern states or of the Aztecs in Mexico.

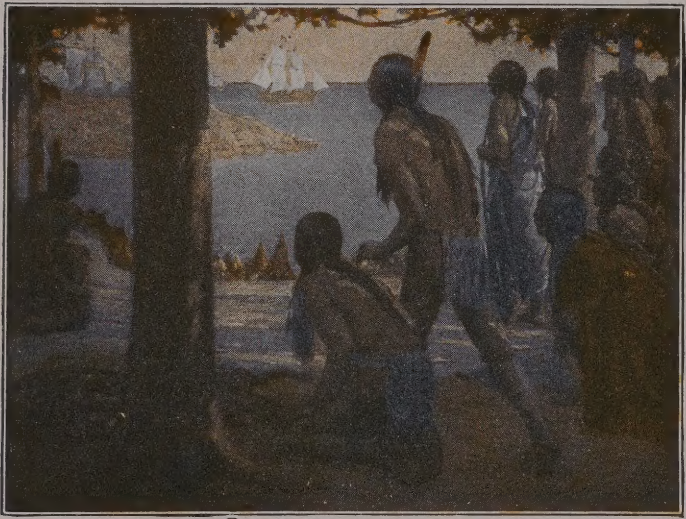
The Seminoles lived in the swampy lands of Florida and built their houses upon stilts, raising the floors several feet above the ground.

The American Indian in Art

"THE Appeal to the Great Spirit" is one of a series of four works of sculpture dealing with the history of the Indian in his contact with the white men. The Indian is here protesting his wrongs and appealing to the Great Spirit for help. In "The Coming of the White Man," notice that the Indians, astonished and frightened at the great, white-winged "water bird," have run away from their wigwam home on the beach and are cautiously watching it. The story of the march of Miles Standish, led by "Hobomok, friend of the white man, through forest and swamp, and along the trend of the seashore," you will, of course, read in Longfellow's majestic verse in connection with your reading of the picture.

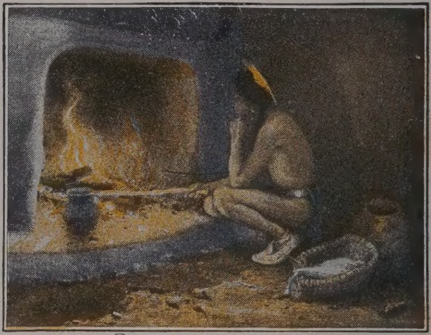


The Appeal to the Great Spirit
by C. E. Dallin (American b. 1861)

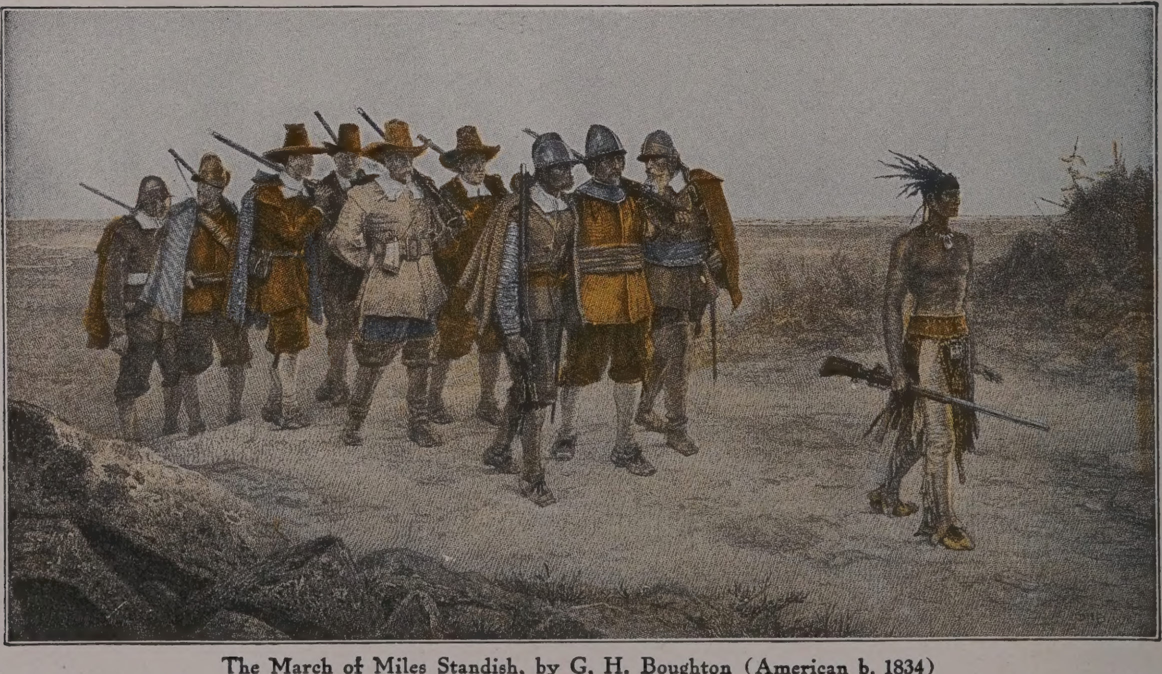


© *A. W. Elson & Co., Boston*
The Coming of the White Man, by Robert Reid (American b. 1862)

The Taos Indian belongs to the semi-civilized Indians, such as those of New Mexico. They not only made baskets and pottery, as shown in the picture, but built towns and temples.



© *Detroit Publishing Co.*
Taos Indian Roasting Corn



The March of Miles Standish, by G. H. Boughton (American b. 1834) ered at the fly-wheel. The brake-power is the indicated power less the losses by friction and similar causes in the engine.

In'digo, an important vegetable dyestuff, yielding a dye of a deep and lasting blue; the basis also for the best black dye in woolen goods. It has been used in India from an early period, and was imported by the Greeks and Romans. It is obtained from a shrubby plant two or three feet high, with rounded leaves and pale-red flowers, belonging to the family of the bean. At the time of harvest the plant must be three months old and in blossom. The plants are cut down, but soon shoot up again, and yield a second and often a third cutting in one year. Bengal is the chief seat of the indigo trade, and large quantities are imported into our own country and Great Britain. Artificial indigo is now made on a large scale, in Germany, from coal-tar products.

Indigo Bird, a bird about the size of a canary, common in the United States and belonging to the finch family. The male is indigo-blue, "the bluest bird that flies in North America," the female a dull brown color and difficult to distinguish from several other small birds. Although naturally shy, they breed near habitations. The nest is often placed in low bramble or brier bushes. They arrive in May and depart for tropical America in September. During the time of their sojourn, the male keeps up a merry and almost continuous singing. In the warmest weather, even in the heat of midday, he is not daunted, but continues his song.

In'do-Chi'na or **Further India,** is the name given to the French possessions in the Anamese peninsula, which extends, in Chinese waters, from the Gulf of Tonquin southwestward to the Gulf of Siam. The region embraces Tonquin or Tonking, Anam, Cambodia, Cochin-China and Laos (*q. v.*).

In'do-Europe'an or **Ar'yan** is the name usually applied to the races and languages of Europe, with a few exceptions, and to the southwestern part of Asia. There are seven principal divisions — the Germanic or Teutonic, the Slavic, Celtic, Italic, Greek, Persian and Sanskrit or Indian. The Germanic branch includes Swedish, Norse, Dutch, Danish, German and English; Irish is a Celtic language; Latin, French, Spanish and Italian are Italic; and Russian is Slavic. The study and comparison of languages prove that all these languages had the same origin and, therefore, that the races originally were the same. The oldest literature in these languages is in the Sanskrit language, and is found in the sacred books of the Hindus. See *Science of Language* by Max Müller and *Language and the Study of Language* by Whitney.

In'dra, a word meaning to see or to discover, is the name of a Hindu god worshiped in the early period of the Hindu religion. He was called "the protector of the pious, the lord of the virtuous and the upholder of heaven, earth and firmament." All the wonderful deeds of Indra, related in legends, were performed for the benefit of the good and wise. He is represented in human form with numerous eyes, and often pictured as riding on an elephant.

Induc'tion Coil, an electrical instrument employed to raise (or lower) the voltage of an induced current above (or below) that of the primary current. The essential parts of such an instrument are a primary coil of wire, a secondary coil of wire, an iron core and a source of alternating current or a source of direct current which is automatically interrupted. In the ordinary transformer, which is an induction coil used in electric lighting, the primary and and secondary coils are wound side by side on an iron core, as shown in Fig. 1. The iron core generally has the form shown Fig. 2. Alternating currents are practically always employed in induction coils of this type. But in the laboratory form the secondary coil is generally wound over the primary, as indicated in Fig. 3. The battery at B magnetizes the iron core. The iron core attracts the vibrator I, and this interrupts the current at K, as will be evident from the diagram. The primary current, therefore, becomes an intermittent. The number of lines of force cutting the secondary at each interruption is

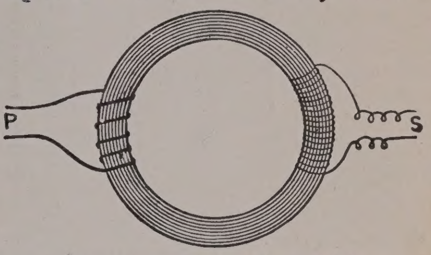


FIG. I. A TRANSFORMER

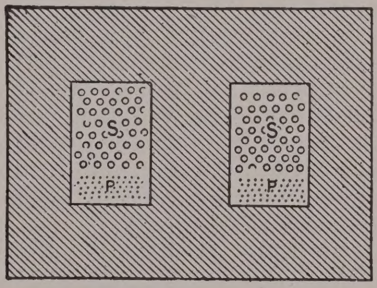


FIG. 2.

(Transformer cores are made of a pile of iron plates having this shape.)

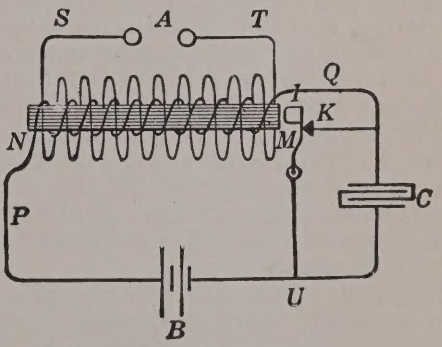


FIG. 3. RUHMKORFF COIL.

enormous; and hence the electromotive force in the secondary is enormous. Such a form is generally known as a Ruhmkorff coil, after one of its early makers. The finished appearance of a typical Ruhmkorff coil is shown in Fig. 4. In the transformer used for house-lighting the secondary circuit contains fewer turns of wire than the primary, and hence the transformer reduces the voltage; but in the Ruhmkorff coil the secondary contains many times as many turns as the primary, and hence raises the voltage. In the transmission of power over long lines, one induction coil is used at the generating station to raise the voltage, and another is used at the receiving station to reduce the voltage, thus securing the economy of transmission which comes from the use of high voltage. For further details, see Thompson's *Elementary Lessons in Electricity and Magnetism.*

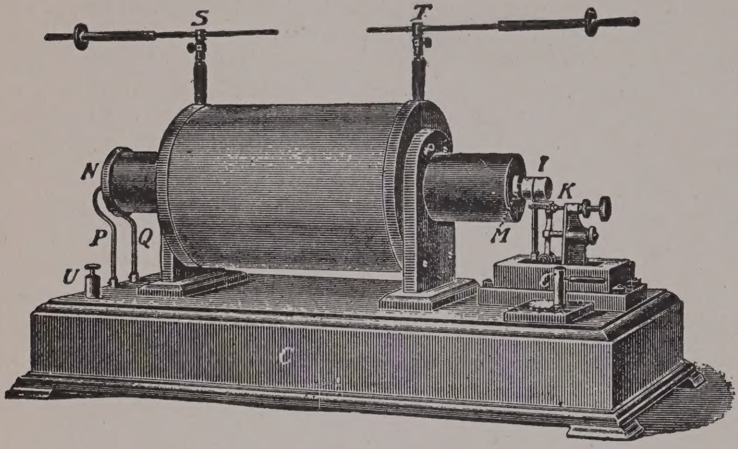


FIG. 4. INDUCTION COIL

Indu'sium (in plants). A flap-like outgrowth of the epidermis in ferns, which covers the sorus or group of sporangia. See FILICALES.

In'dus River ("to flow"), is the great river of India, which bounds Hindustan on the west. It rises in Tibet, 16,000 feet above the sea, on the north side of Kailasa, a peak of the Himalayas. It flows through deep wild gorges, with steep sides, rising as high as 10,000 feet. The Indus abounds in fish of fine quality, and is infested with crocodiles. In the lower part of its course the river divides into many channels. The main channel is constantly changing, and the bed of the river is dotted with islands and sandbanks. The total length of the river is 1,900 miles. The delta, formed by the channels at the mouth, covers an area of about 3,000 square miles, and extends for some 125 miles along the Arabian Sea.

Indus'trial Schools have grown up chiefly as a substitute for the old system of apprenticeship, which (according to a U. S. Bureau of Labor Report) has declined from (1) production on a large scale, which destroys the personal relations between the master and apprentice; (2) the extensive use of machinery and subdivision of labor; (3) the unwillingness of employers to take on apprentices; (4) the unwillingness of journeymen to instruct apprentices; and (5) the dislike of boys for apprenticeship.

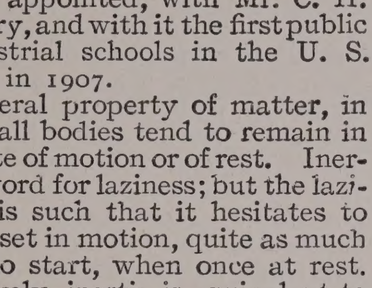
Industrial schools seek to maintain the efficiency of a system of apprenticeship, while preserving the personal relation between teacher and taught, enabling a boy to move freely from task to task within his trade, overcoming his dislike for the learning operation, and continuing his liberal education. Germany has a thorough system of public industrial education in all grades, in all branches and for all classes. The U. S. has no such system, save one which is in process of organization in Massachusetts, but has private industrial schools and some industrial training in the public schools. Technical and polytechnic schools (*q. v.*) might be regarded as secondary industrial schools. Apart from these, there were no schools of an industrial character in the U. S. until 1870. In that year Massachusetts introduced industrial drawing into the public schools; and by 1890 this subject was taught in 201 out of the 351 cities and towns of the state. The law of 1898 made drawing compulsory in the public schools of Massachusetts, and required the foundation of evening-schools for drawing in towns of more than 10,000 inhabitants. Sewing was required of girls in Boston in 1870. Manual training was attempted in New York in 1874, and is now widely taught in its public schools. In 1900 it was offered in the public schools of 169 towns of more than 8,000 inhabitants. The larger cities have established manual-training high schools, in which four years are given to courses in manual practice alongside the regular curriculum of the high school. The extension of industrial drawing in the public schools led to the foundation of schools of industrial design. Such are the Lowell School of Practical Design, Mass. (1872), the School of Industrial Art, Philadelphia (1877), the Rhode Island School of Design (1878); and recently many others. The Textile School grew out of the School of Industrial Art at Philadelphia, and has been followed in eight or ten cities.

In the south, industrial schools have been founded for the education of the colored race. Hampton Institute, which opened in 1868, was so successful that a number of similar schools have sprung up, that at Tuskegee, Alabama, having more than 1,000 pupils.

Elementary industrial education in the U. S. is promoted also by continuation schools (*q. v.*) and evening-classes in connection with technical institutions. But it seems clear that a thorough system of day public industrial schools is needed. The first commission on industrial and technical education in Massachusetts made a report in 1906, in which it was advocated that a commission be appointed for a term of years to provide industrial schools independent of the existing public schools, to be adapted for boys and girls of from 14 to 16 years of age. These schools are to be supported by the municipality, aided by the state in proportion to local expenditure. Such a commission has been appointed, with Mr. C. H. Morse as secretary, and with it the first public system of industrial schools in the U. S. was established in 1907.

Iner'tia, a general property of matter, in virtue of which all bodies tend to remain in their present state of motion or of rest. Inertia is the Latin word for laziness; but the laziness of matter is such that it hesitates to stop, when once set in motion, quite as much as it hesitates to start, when once at rest. Used quantitatively, inertia is equivalent to *mass* or *quantity of matter.* Newton showed that the inertia of a body is strictly proportional to its weight, and hence we measure the inertia of a body by weighing it Hicks and others have invented balances by which the inertia of bodies may be compared without weighing them; and this is the really fundamental method of measuring the quantity of matter in a body. See DYNAMICS.

In'fantry. See ARMY.



A, spike; *B*, compound raceme; *C*, compound umbel; *D*, head.

In'floresc'ence. Flowers either may occur solitary upon plants, or they may be collected together in a definite region of the plant body, which region is then termed the inflorescence or flower-cluster. Flowering plants, therefore, have their flowers either solitary or in an inflorescence. Great attention has been paid to the various forms of inflorescence, since they are quite constant in different plants, and are really serviceable in distinguishing them. The various flower-clusters are not always easy to separate, as they pass gradually into one another, but the prominent forms are easily distinguished. There are two general types of inflorescence, known as the "botryose" and "cymose" types. In the botryose type the lowest flowers are the oldest, the buds being above, and the flowers continue to bloom upward in what is called acropetal succession, that is, toward the apex. In the cymose type this order is reversed, the first flower being the terminal one and the buds successively arising below, the succession of blooming being basipetal, that is, toward the base of the plant. The botryose forms of inflorescence are much more numerous and various than the cymose. The prominent botryose types are: "Raceme," in which the flowers are distributed upon an elongated axis, each upon its own pedicel, as in spring beauty; "panicle," which is really a compound raceme, in which the flower stalks branch again as in the spray-like clusters of grasses; "Thyrsus," a compact pyramidal panicle, as the lilac or a cluster of grapes; "Corymb," in which the lower flower stalks are elongated, thus bringing all the flowers up to a level, resulting in a flat-topped cluster; "Umbel," in which the axis is shortened and the numerous pedicels arise from the same point, like the ribs of an umbrella, resulting in a flat-topped cluster, as in the common carrot, the name umbel being derived from its umbrella-like form; "Spike," in which the flowers are sessile along an elongated axis, as in the plantain; "Spikelet," a small spike or one member of a branching spike, the name being applied chiefly to the smaller clusters in the grass inflorescence which go to make up the spike or panicle; "Head," in which the flowers are sessile or nearly so upon a shortened or broadened axis, as in the sunflower, dandelion etc.; "Ament" or "Catkin," in which the flowers on the elongated axis are subtended by conspicuous bracts which overlap one another and completely cover them, as in the pussy willow, birch, alder etc.; "Spadix," in which the axis becomes fleshy, bearing minute sessile flowers, and is more or less overarched by an enormous bract known as the "spathe," as in Jack-in-the-Pulpit, calla lily etc.

It will be noticed that certain definite relations exist among these forms, so that they may be referred to one another easily. The raceme seems to be the more primitive type of inflorescence, and the others are more or less modifications of it. For example, the corymb is a raceme in which the lower pedicels are elongated, so that a flat-topped cluster is produced; an umbel is a raceme in which the axis has been much shortened, so that the pedicels are thrown together; a spike is a raceme in which the flowers are sessile; a spadix is a fleshy spike; a head is an umbel with sessile flowers; while a catkin or ament is a spike with unusually conspicuous bracts. The cymose inflorescence is chiefly represented by the cluster known as a "cyme," a flat-topped cluster resembling the corymb; but the central flowers, that is, the uppermost, bloom first, so that the succession of blooming is toward the outer part of the cluster, as in the common elder.

JOHN M. COULTER.

In'fuso'ria, microscopic animals common in stagnant water and in infusions of vegetable and animal substances. Formerly, certain microscopic plants, which have the power of movement, were confused with them, and a general term *animalcula* was used to designate all microscopic life. The infusoria are single-celled animals, the largest being just visible to the unaided eye They constitute a natural class of the subkingdom protozoa. They were discovered by Leeuwenhoek in 1675, about the time the microscope in a simple form was coming into use. They swim by means of numerous, hair-like processes extending from the body and called cilia or by one or two larger strands of protoplasm called flagella. A few are attached to stalks. The chief divisions of the infusoria are into ciliata and flagellata. The former are easily separated into smaller divisions according to the arrangement of the cilia. See PROTOZOA.

In'galls, John James, an American lawyer, essayist and statesman. He was born at Middleton, Essex County, Mass., Dec. 29, 1833. He graduated at Williams College, studied law, and was admitted to practice in Massachusetts in 1857, and in 1858 went to Kansas. He was elected United States senator from Kansas in 1873, and was again elected in 1879 and in 1885. Ingalls was noted for scholarly attainments and quick and acute perception. He was an eloquent speaker, his power of sarcastic rejoinder being a marked trait. As a writer of essays and a lecturer his diction was elegant and concise, and he excelled in the power of picturesque description. He was the author of the famous single-stanza poem *Opportunity.* He died at Las Vegas, New Mexico, Aug. 16, 1900.

Ingelow (*ĭn'jĕ-lō*), **Jean,** a popular English poet and novelist, was born at Boston, Lincolnshire, England, in 1820. A great part of her poetry is of a devotional type, sweet and simple and filled with beautiful thoughts. Among her noted works are the poem, *Divided,* the ballad, *High Tide on the Coast of Lincolnshire,* and the larger poem, *A Story of Doom.* Her works of fiction are *Off the Skelligs, Fated to be Free, Sarah de Berenger, Don John* and others. She died at London on July 20, 1897

In'gersoll, Robert G., a prominent lawyer, a politician, and a sceptical writer and lecturer on religious topics, was born in New York in 1833, and died in 1899. His oration in favor of J. G. Blaine at the Republican convention of 1876 showed him to be a great orator, and lecturing thenceforth became his occupation. His works include *The Gods; Ghosts; Some Mistakes of Moses; What Shall I do to be Saved? Great Speeches;* and *Prose Poems.*

In'graham, Duncan Nathaniel, a Confederate officer, was born in South Carolina in 1802. Entering the United States navy as midshipman in 1812, he became captain in 1855. He commanded the *St. Louis,* sailing in the Mediterranean, and prevented the arrest, by the Austrians at Smyrna, of Martin Koszta, a Hungarian, who had declared in New York his intention of becoming an American citizen. The course of Captain Ingraham was approved by our government, and Congress voted him a medal. He was made chief of the bureau of ordnance, resigning in 1861 to take a like position in the Confederate navy, where he became commodore. He died in 1891.

Inher'itance-Tax. This tax is imposed on those acquiring property by inheritance or will. It is often imposed simply for the revenue it brings in; for it is easy and cheap to collect, hard to evade and one of the least unpopular forms of taxation. In most countries some form of inheritance-tax exists, and in most of our states. A special form of the tax is called the collateral inhertance tax, which imposes a higher rate upon property that is willed to distant relatives or to strangers. The form of inheritance tax that is exciting special interest at this time is one that charges a higher rate on larger fortunes, and has for its purpose not revenue only, but the diminution of large inherited fortunes. The Australasian colonies seem to have led the way in imposing such graduated inheritance-taxes. England adopted it in 1894 as a means to meet her great expenses. Congress has imposed such a tax on three occasions: from 1797 to 1802; for eight years between 1862 and 1870; and from 1898 to 1902. In the earlier of these the rate was much less on very small fortunes.

Injec'tor, an instrument used to force water into a boiler by using the energy in a jet of steam taken from the boiler into which the water is to be forced. It is simply an instrument for allowing steam to escape from a boiler through a suitable nozzle and to suck up and mix with a stream of cold water, by which it imparts so much of its own energy that the combined mass of cold water and condensed steam enters and feeds the boiler. The injector takes many special forms given by different makers and for special conditions. The injector was invented in 1858 by H. J. Giffard, a French mathematician and engineer. It is used universally on locomotives. It is said that "it is without doubt better than any device hitherto used for feeding boilers and the best that can be employed, and also is the simplest and the most ingenious."

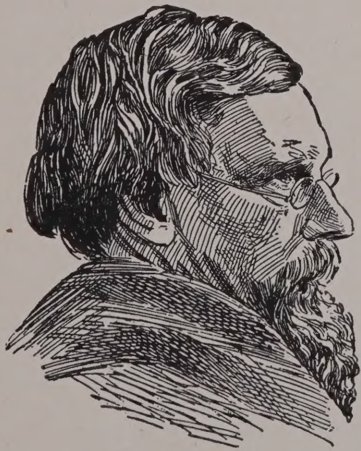
Initiative, Referendum and Recall. The Initiative is a method of popular control by which a minority, ranging from 5% to 25% of the voters, may petition for a state law or city ordinance. The proposed enactment must then, without change, be voted upon. If approved by a majority, it becomes a law. Laws and ordinances so passed are not subject to veto. The Initiative originated in Switzerland and has been extensively adopted in this country, particularly in states where cities have the Commission (*q. v.*) form of government. In commission governed cities the Referendum, under which by petition any ordinance already enacted must be similarly referred to the voters for approval, is quite common. Since 1898 it has also been used in state legislation to a greater or less degree. Another form of popular control of government is the Recall, under which by petition the voters may recall or remove from office any official whose conduct they disapprove.

Ink, any fluid which may be used for writing or printing. The two most important kinds of ink are writing ink and printing ink. India ink, the best of which is made in China and Japan, is a mixture of carefully prepared lampblack and gum. It is very black and perfectly permanent, and is used largely in making drawings. The main ingredients of common black ink are galls, sulphate of iron and gum arabic.

Ink'erman, Battle of, occurred in 1854 at the small Tartar village of the same name, in the Crimea. It is situated near the eastern extremity of the harbor of Sebastopol. The battle took place, during the Crimean War, between 60,000 Russians and 14,000 allied English and French forces. About six o'clock in the morning of Nov. 5, the Russians marched out, their movement being concealed by darkness and a drizzling rain. Suddenly they appeared crowding upon the slopes of the plateau upon which were posted the opposing forces. Only a handful of men, 1,400, made a heroic stand for six hours against overwhelming odds, when re-enforcements drove the Russians defeated from the field. See Kinglake's *History of the Crimean War.*

In'man, Henry, an eminent American painter, was born in Oct., 1801, at Utica, New York. He became a pupil of Jarvis, and early excelled in miniature painting. His genius was broad, extending to portraits, landscape and historical subjects. Among his best works are *Rip Van Winkle Awaking from His Dream, Mumble Peg, The Boyhood of Washington* and portraits of Wirt, Audubon, Van Buren and Seward. He died at New York, Jan. 17, 1846.

Inn'ess, George, an American painter, was born at Newburg, N. Y., May 1, 1825. He began landscape-painting at 21 in New York city, and later went to Europe, residing in Italy for a considerable period. Returning to America about 1868, he lived in New York until 1871, when he again went to Italy, where he lived until 1875. He became a member of the National Academy in 1868, and at the Paris Exposition of 1889 received a third-class medal. After his death, which occurred at the Bridge of Allan, Scotland, Aug. 3, 1894, 240 of his pictures were sold at auction for $108,670. He ranks as one of the best of the American landscape-painters.



GEORGE INNESS

In'nocent, the name of 13 popes, the most remarkable being:

Innocent I, a native of Albano, who was elected bishop of Rome in 402 A. D. His rule is one of the most important and energetic in the history of the Roman church. He condemned heretics, sent legates to represent the church in distant countries, insisted on the rights of the bishop of Rome to receive and judge cases appealed to him, and enforced with the clergy the prohibition of marriage. He died in 417, and was put on the list of saints. St. Innocent's Day is July 28.

Innocent III (G. Lothario Conti) is esteemed the greatest pope of this name and one of the very greatest among all the popes. He was born at Anagni, Italy, in 1161. His school training was received at Paris, at Bologna and at Rome, where he was made cardinal. In 1198, at the early age of 37, he was elected the successor of Pope Celestine III. He then was in the full vigor of manhood — his mind filled with lofty purposes and ambitions. He believed that to the successors of St. Peter Christ had given power not only over the church but over the world. The crowns of kings and the destinies of nations were to be placed in the hands of the popes. Almost every state was brought under his power, Italy, France, Spain, England and Germany, through their rulers, obeying his dictates. It was at his call that the crusade against the Albigenses was begun. He was a careful guardian of public and private morality; a protector of the weak; and zealous to suppress evils of all kinds in society. All the force of his power and influence was given to founding the great Franciscan and Dominican orders of monks. In 1216 he died at Perugia at the age of 56. His character has been spoken of by historians as "high and blameless, wise and gentle." See *Latin Christianity* by Milman and *History of the Popes* by Ranke.

Innocent XI (Benedetto Odescalchi) was born at Como, Italy, in 1611, and elected pope in 1676. He was distinguished for learning and for nobility and force of character. His historical renown is mainly owing to his contest with Louis XIV of France. A dispute arose about the right of the king to keep bishops from their charges and to retain the revenue from the vacancies thus caused. The pope gave notice that he would not receive the credentials of any new ambassador at his court who would not renounce this claim. Louis resisted this decree and sent a large body of military and naval officers to support his pretensions. Innocent was immovable, and still refused to admit the ambassador of France. Louis then seized the papal territory of Avignon in reprisal, but the pope remained firm in his decision. Before the dispute terminated, Innocent died in 1689. See *The Ring and the Book* by Robert Browning.

Innsbruck (*ins′bro͝ok*), is the capital of Tirol, Austria. It stands on the River Inn, 1,880 feet above the sea, and is overhung by mountains ranging from 7,500 to 8,500 feet in height. It is a pretty place, with broad streets shaded by fine trees. It contains many beautiful public buildings, and has four large squares or parks adorned with statues. There are a university with 102 professors and 1,009 students, founded in 1677; an old Franciscan church; an imperial castle; and eight monasteries. The city carries on manufactures of woolen cloth, machinery, glass and glasspainting. It is a place of some commercial importance, owing to its situation at the head of Brenner Pass on the route to Italy. Population 27,056, exclusive of the suburbs.

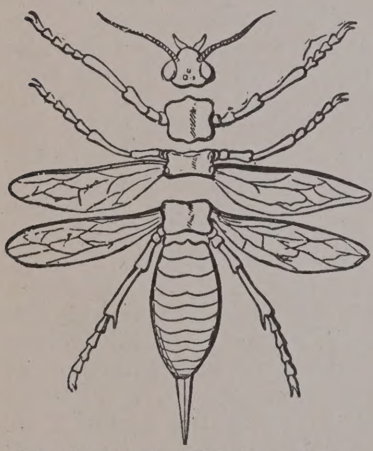
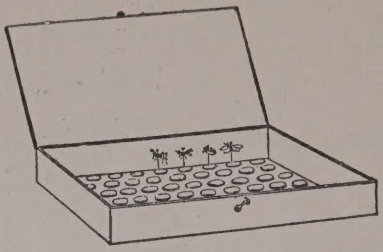


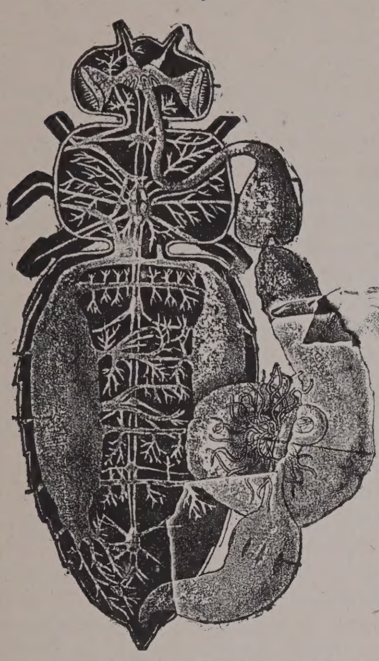
DIAGRAM OF THE PARTS OF AN INSECT.



INSECT COLLECTORS BOX

In′sects, the most abundant of all animals known by their jointed body, six legs and distinct head, thorax and abdomen. The spiders, which are closely related, have eight legs and a united head and thorax. The head carries eyes, antennæ or feelers and mouth parts; the thorax consists of three parts carrying the legs and wings; the abdomen has egg depositors, stings etc. Insects breathe by means of air-tubes which open upon the exterior. The openings are buttonhole-shaped, and are usually situated on the joints of the abdomen. Most insects are hatched from the egg in the form of a caterpillar or grub and pass through a series of changes (see Caterpillar, Moth and Butterfly) called the metamorphosis. In others, like the grasshopper, there is an incomplete metamorphosis, for the egg hatches into a six-legged, immature insect, resembling the adult in general form, but without wings. These grow and moult, and gradually develop wings, but at no time do they pass into a cocoon or pupa stage. Insects are easily preserved, and a cabinet or collection can be begun with a very simple outfit. There are required a net; a collecting bottle; pins; and a box for holding the collection. They may be killed with benzine, chloroform etc., but, for all except butterflies, a collecting bottle is more convenient. Provide a wide-mouthed bottle with a good cork that fits tightly; in the bottom put an ounce of potassium cyanide broken into lumps no larger than a filbert; add sawdust somewhat more than to cover the largest lumps; then pour in a quarter of an inch layer of plaster of paris mixed to the consistency of thick cream. The bottle should be kept tightly corked and great care taken not to breathe the fumes of the cyanide, which are very poisonous. Insects put into the bottle are killed almost instantly by the fumes coming through the plaster and saturating the air. Care should be taken in the spreading of the insect; while still flexible the various parts — wings, legs etc. — should be arranged as it is desired they should appear when dry. Insect-pins or fine needles mounted on match-sticks are needed for this, and nothing else save some cards or thin boards — grape-basket covers or cigar-box wood. The natural position of the insect should be studied and attempted. Dust-proof boxes are made for holding insects and especial pins manufactured, but common pins and a shallow cigar-box will do for the beginner. Pieces of cork can be glued to the bottom and pins inserted in the cork.

Insect Anatomy. There is nothing more fascinating than the study of the internal anatomy of insects The delicacy of their structure is a marvel. The organs are outlined in white, often like fine tracery, and it is a matter of continual surprise to the observer to find within such small compass all the different systems of organs represented. They should be dissected under water — pinned out on a piece of soft wood or loaded cork — in order to float out the delicate parts which will otherwise become matted together. This field of observation was opened by Malpighi (1628–94), who in 1669 wrote a celebrated monograph on the anatomy of the silkworm, fully illustrated. This was the beginning of insect anatomy. He was so profoundly impressed with the beauty and delicacy of what he saw that he said: "In performing these researches so many marvels of nature were spread before my eyes that I experienced an internal pleasure that my pen could not describe." Swammerdam (1637–80) engaged in similar work. He was a critical and careful worker, and made observations on the metamorphosis as well as the structure of insects. His publications on the anatomy of the honeybee and the may flies were very fine. But the golden period of close observation and artistic illustration was reached in the work of Lyonet (1707–89). In 1760 was published his monograph on the minute anatomy of the larva of the willow moth. He counted more than 4,000 muscles in the body of that tiny animal, and traced the branches of nerves and breathing tubes to individual muscles. It is unsurpassed as a piece of delicate work, and his sketches are as fine as any ever executed. Strauss-Durckheim (1790–1865) comes next in succession. His monograph on the anatomy of the cockchafer (1828) rivals that of Lyonet in accuracy and detail. He wrote under the influence of Cuvier, who had introduced the comparative method into anatomy, and he undertook to make insect anatomy comparative. Newport of England carried the work to a higher level, and began to observe the embryology of insects. Since his time much work has been done on their microscopic structure. Franz Leydig has been a pioneer and leader in this line, and his studies on the anatomy of sense-organs of insects are famous. The embryology of insects has also been studied with success by a very large number of observers.

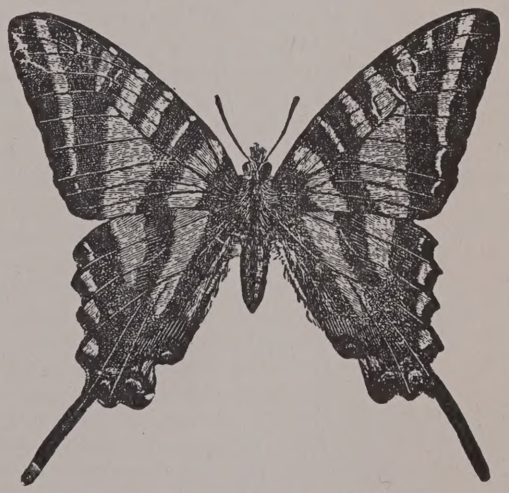


INTERNAL SECTION OF THE HONEYBEE

Insects are of interest to the naturalist from the standpoint of their structure, metamorphosis, embryology and classification. They are of importance to the agriculturist on account of the injuries they cause to crops, shade trees etc. "It has been calculated that insects about equally divide the produce of the soil with the farmer." Many states support a state entomologist to limit the ravages of injurious insects like the army worm, weevils, Hessian fly, locusts etc. (consult these topics). The simplest insects are worm-like and wingless, or with rudimentary wings, thus suggesting affinities between insects and worms. A very interesting form, named peripatus, has been discovered in Africa, Australia and South America that unites the two groups. This is a long-jointed animal resembling a worm externally, except that it has antennæ and jointed legs. Internally it has breathing tubes, which belong to insects as a class, and a pair of secreting tubes in each joint, except a few at the extremities. These tubes correspond to secreting tubes of worms.

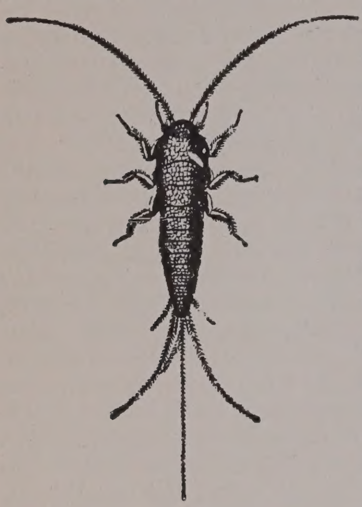
Classification of Insects. Insects are grouped into orders, mainly according to the nature of their wings. It is estimated that there are about 300,000 species. They are so multitudinous that reference must be made to a textbook on entomology for any adequate treatment. Nevertheless, it will be convenient for the amateur student to have a means of recognizing the order to which any common insect belongs. It will be simpler to begin with the highest order of the class *Insecta* and pass downward:

IX: *Hymenoptera*, bees, wasps, ants, ichneumon flies and others. Insects having four membranous wings with few cross veins. Mouth-parts formed for biting and sucking. The highest developed of insects in organization and intelligence. (See Lubbock, *Ants, Bees and Wasps.* See, also, Ant, Bee, Ichneumon Flies, Wasp etc.) VIII: *Coleoptera*, beetles. Insects with hard wing-covers, the inner membranous pair used only for flying. This is the most numerous order, there being more than 11,000 species known in America north of Mexico, and the number in tropical regions is immense. (See Beetle, Carpet-Beetle, Weevil etc.) VII: *Diptera*, flies, gnats, midges and others. Two-winged insects with mouth-parts formed for sucking. (See Gnat, Hessian Fly, Mosquito etc.) VI: *Lepidoptera*, butterflies, moths and others. Insects with four wings covered with overlapping scales. Mouth-parts formed for sucking. (See Army-Worm, Butterfly, Caterpillar, Moth etc.) V: *Neuroptera*, ant-lion, dobson and others. Insects having four membranous wings with numerous veins. Mouth-parts formed for biting. Formerly the dragon-flies and others were included in this order, but the modern entomologists have split the old order into ten new ones. IV: *Hemip-*



SWALLOW-TAIL BUTTERFLY

tera, all true bugs, plant-lice, seventeen-year locusts and others. Insects with four wings, constructed on two types—some with outer wings, thickened at the bases and thinner tips, which overlap on the back; others with wings of the same thickness throughout. Mouthparts formed for sucking. The metamorphosis is incomplete. (See CHINCF BUG, CICADA, ELECTRIC-LIGHT BUG etc.) III: *Orthoptera*, grasshoppers, crickets and others. Insects with four wings, the outer pair being straight and not used for flying; the inner pair or flying wings are folded like the plaits of a fan. Mouthparts formed for biting. Metamorphosis incomplete (See CRICKET, GRASSHOPPER, KATYDID etc.) II: *Odonata*, dragonflies and others. Insects with four membranous wings finely netted with veins. Mouth-parts formed for biting. Metamorphosis incomplete. (See DRAGON-FLY.) I: *Thysanura*, spring-tails, bristle-tails and others. Insects without wings which undergo no metamorphosis. The larval form is retained by the adult. In some cases, in addition to the six legs belonging to all insects, there are rudimentary legs on the abdomen. They form a sort of connecting-link between the other insects and the myriapods. Besides the insects mentioned above, the mayflies, stone flies, white ants, book lice, bird lice, thrips, scorpion flies and caddice flies each separately represent an order in the modern classification of insects.


LEPISMA, A SPRING-TAIL

Insects and Flowers. Insects are of the greatest value in that they practically create by cross-pollination our beautiful and fragrant blossoms and our most valuable varieties of fruit. In destroying injurious insects, however, little hesitation need be felt, for the honeybee alone is "practically sufficient for the work of cross-pollination of fruits and flowers." (Hodge.) While a few feed upon flower-petals, by far the greater number are attracted by the pollen or nectar, the nectaries being so placed that the insect will have to touch anthers and stigma in getting to its feast. Pollen clinging to the insect is brushed against the stigma of a flower of the same kind visited by the carrier, clings to the stigma and is conveyed to the seed-cup, and the flower is fertilized. Insects that, in addition to the bees, are agents in cross-fertilization, include wasps, most butterflies and moths, certain bugs, flies and beetles.

Insulin, Discovered by E. L. Scott, 1911; rediscovered, applied by F. G. Bantling and C. H. Best, 1921. Aqueous solution of the probable active principle of the islands of the pancreas. Prepared by extracting minced fresh pancreas with alcohol and sulphuric acid. It causes complete metabolism or digestion of fats, eliminating acetone, diacetic acid, etc., which produce diabetes. It is not a cure; it must be used continually.

In'stitute of France, The. The principal philosophical and literary society of France, originally proposed by Richelieu, for which letters patent were issued in 1635 under the name of the Académie Française. Later many new bureaus or departments were added, as the Academy of Inscriptions and Belles-Lettres; the Academy of Sciences; and those of sculpture and painting, music and architecture, the later name of which is the *Académie des Beaux Arts.* At present the Institute is made up of five distinct academies, each having its own officers, meetings and publications. The *Académie Française*, whose origin has been stated, is the first. Its department is the French language and literature, and its ordinary members number 40. The *Académie des Inscriptions et Belles-Lettres* comes next, having 40 ordinary, 10 honorary and 100 corresponding members. The *Académie des Sciences*, which has 65 ordinary, 10 honorary, 8 foreign and 100 corresponding members, is third; and the *Académie des Beaux Arts* is fourth. This has 40 ordinary, 10 honorary, 10 foreign associate and 40 corresponding members. It distributes prizes. The *Académie des Sciences Morales et Politiques* is the last. This has 40 ordinary, 6 honorary, 6 foreign associate and 40 corresponding members. Salaries are attached to memberships. There is a fine library.

Insur'ance. The two chief kinds of insurance are that relating to property—fire and marine; and that relating to the person—life and accident. Under its contract (called the policy) the insuring company agrees, in case of property insurance, upon payment of an annual premium by the insured, to repay any loss sustained up to the amount of the insurance, unless the loss is deliberately caused by the insured. In life and accident insurance a fixed sum is paid to the person for whose benefit the insurance is taken out. Other losses and accidents against which insurance is issued, include: Plate glass fractures, steam boiler explosions, burglary and damage to crops by hail or tornadoes. Insurance companies also, for an agreed premium, go upon the bonds of employes and insure titles to property.

An interesting form of insurance is that against sickness and unemployment of which the Lloyd-George (*q. v.*) measure passed in 1911 is a striking example. To the unemployment fund provided by the act workingmen and their employers each contribute 2½d weekly, the state adding an amount equal to ⅛ of their aggregate contribution. For national health purposes, male employes contribute 4d, female 3d. For each employe the state adds 2d weekly. Employers pay the employes' contributions, deducting them from wages. The benefits include: Medical, sanitarium, sickness varying from 10s to 6s weekly for 26 weeks, disablement and maternity.

Integ'ument (in plants). A special envelope developed about the ovule of seed-plants. There may be one integument or two. In either case the integument is not distinct about the whole ovule, but only in its upper portion. At the apex of the ovule the integument or integuments leave a small passage-way, known as the "micropyle," which is for the passage of the pollen-tube on its way to the nucellus, the interior and essential part of the ovule within the integuments. It is in the integument tissue that the hard coat or "testa" of the seed develops after fertilization. See OVULE.

In'tercolo'nial Rail'way, The, is a government property. An all-Canadian system, it is the only all-rail line from Montreal to the extreme points of the maritime provinces, and (with the Prince Edward Island Railway) embraces nearly 1,700 miles of well-built road with excellent rail and steamer connections. It traverses an inviting tourist country, and reaches Quebec, Rivière du Loup and Cacouna. The general offices are at Moncton, 186 miles from Halifax. It runs to St. Johns, the capital of New Brunswick and 89 miles west of Moncton. It enters Nova Scotia and serves Halifax, Truro, Pictou, New Glasgow and other important points. It was one of the main links in effecting federation.

In'terest. When any special sort of activity engages our attention so that we are, as it were, compelled to take part in it, it is said to be interesting. Interest involves feeling (*q. v.*), and is based primarily upon the native instincts of the person. As the expression of the supposed natural man, interest has been looked upon with suspicion by those moralists who regard the aim of life as the control or suppression of the native desires for the sake of some higher ideal of duty. Mankind very early in the history of civilization comes to regard as one of the principal aims of education the suppression of the natural cowardice and selfishness of the individual and the substitution of courage and self-sacrifice for the sake of the community. Discipline is the aim of the savage who cruelly tattoos his person with tribal emblems to show his fortitude and devotion to his people and of the more modern Puritan schoolmaster who believes that to spare the rod is to spoil the child. It is by discipline that the natural man is conceived to be made into a civilized man. According to the Christian ascetics, it is by discipline that the mortal body is conquered by the immortal spirit and the original sin of natural desire eradicated to make way for self-abnegation, submission to the will of God.

Against this time-honored view Rousseau set himself. He declared that the natural man is better than the artificial product of the training of society. He saw in the discipline of social education, not the benevolence of God, but the tyranny of man. God, he conceived, created the natural man, whom scheming priest and noble strive to reduce to slavish submission by a cruel and debasing education. The true divine plan is to let nature take its course, and true education is based on the interests of the child.

But inspiring and revolutionary as were the ideas of Rousseau, his educational scheme was in itself quite as one-sided as the one he strove to replace. For the natural impulses, unless they are organized and brought under control, leave the individual a prey to the inclination of the moment. His mental life is anarchy and not an expression of character. Rousseau assumes that self-control will naturally spring up, but he does not sufficiently emphasize its importance. Kant, the German philosopher, represents a reaction. While he agrees with Rousseau that the rod of the schoolmaster, instead of creating free and noble character, simply terrifies the child into slavery, he maintains that character means control of natural inclinations and interests. One who gives up his natural desires because of fear of social consequences is simply substituting one interest for another. The truly free man is one who governs himself by an inborn idea of duty without any reference to interests or consequences. This ideal the schoolmaster can not create by education or discipline. Hence in the long run Kant agrees with Rousseau that in reference to the highest result, character, education can do no better than to let the child alone.

This view rouses in Herbart intense opposition. He maintains that character does not consist in doing the right instead of the interesting, but rather in being interested in doing the right. He declares that self-control does not mean the imposition of an independent ideal of virtue upon natural inclinations. On the contrary, it consists in an organization and harmonizing of these interests through the discovery of their interrelation and interdependence. Moreover, he accounts for the interests from the experience that education gives the child. We become interested in things because we know something about them. The problem of the teacher is to present such a variety of experience that all the interests, sympathetic as well as individual, esthetic and religious as well as scientific, shall be developed. Then true self-government will appear in a democracy of desires, each sharing in governing and being governed; and not in a tyranny of uninteresting duty.

The influence of Rousseau, Herbart, Froebel and others has been powerfully felt in modern education. Teachers of ability have everywhere striven to make their schoolwork spring out of the interests of children, or, at least, fasten upon them. They have tried to make education interesting. The result has been what the surviving advocates of discipline and effort stigmatize as "soft pedagogy." Pupils, they say, are no longer trained to have the strength of will to do the hard and uninteresting work of life. They are left by the school weak and flabby, demanding continual entertainment and capable of doing only that which appeals to their inclinations. This criticism Professor Dewey declares to be justified, not as directed against the importance of interest, but as against an imperfect application of the idea to practice. He agrees with Kant and the disciplinarians that will and character consist in power to do difficult things. But he also agrees with Herbart that no one ever can or will do a difficult thing unless he be interested in it. Here, however, Professor Dewey makes his own contribution to the discussion. To be interested in a thing, he says, means not to find it easy, as "soft pedagogy" assumes. Nor does it mean simply to know something about it, as Herbart seems to think. Teaching means more than presenting material to the mind. It means rousing interest in that material by showing it to be *worth while.* Then and only then will effort be put forth and will be developed. Character means a trained sense of value as well as power of sustained effort. See APPERCEPTION, FEELING, CHILD-STUDY and SELF-ACTIVITY. Consult McMurry's *General Method* and De Garmo's *Interest in Education.* E. N. HENDERSON.

In'terfer'ence, a term employed in physics, especially in the study of wave-motion, to denote the combination of two or more wave-motions at any point. If two waves of equal amplitude reach any point in opposite phases, that is, if the crest of one wave meets the trough of the other, they just counteract one another. Such a pair of waves are said to *interfere.* Since they completely annul one another, the interference is said to be *destructive.* In this manner two sound-waves may be added together and thereby produce silence; and two light-waves may be easily added together to produce darkness. For details of these experiments see any good text-book of physics. But two waves may meet in the same phase; and, if they have equal amplitudes, the resultant wave will have twice the amplitude of either of its components. This is also called interference. Indeed, when waves of any amplitude combine in any phase whatever, the process is called interference. A superb illustration of interference is met with in the spring and neap tides. At any one port the tide due to the moon and that due to the sun are always combining to produce the actual tide; but when they meet in opposite phases, that is, when the solar high tide occurs at the same instant as the lunar low tide, we have the *neap tide* as the result of interference. But when the solar high tide coincides in time with the lunar high tide, we have the *spring tide,* as the result of interference. For a history of this subject, as employed in light, see *Wave-Theory of Light* in Harper's Scientific Memoirs.

Interlaken (*ĭn'ter-lä'ken*) (between the lakes) a village of Switzerland, in the beautiful valley of the Aar, between Lakes Thun and Brienz. It is a favorite resort for tourists, 24,000 to 35,000 in number yearly, and contains many inns and hotels. It is from here that the tour is made for reaching many of the most wonderful scenes of nature in the region. Near by are many of the celebrated glaciers of the Alps. The village was founded by Augustine monks in 1130. Its population is about 3,000.

In'terna'tional Date Line. Places on different longitudes have different times, if the time is counted from the arrival of the sun at its zenith or highest point. Every nation, therefore, has a time of its own, usually taken from the moment when the sun is at its zenith over the capital city. But it is necessary that there be one time which shall be accepted by all nations, especially for the use of sailors. This international time is taken from the time of Greenwich Observatory, near London, which is at 0° longitude. On the opposite side of the earth, at 180° longitude, is the international date line. A person going *east* from Greenwich, round the world, moves towards the sun, and every day he sees the sun a little earlier than the day before. If he went round the earth, he would thus gain 24 hours, and, unless he corrected his date somewhere, he would be one day ahead of Greenwich. Now, it is arranged to correct such an error at the international date line in the same way as we correct our watches when we pass certain imaginary lines on the surface of the United States, so that they may agree with the time of the places to which we come. Thus, a person going *west* round the world would lose a day from the year, because his movement makes each day longer. Hence, if he gets to 180° at 3 P. M., Wednesday, according to the time of the places he has just left, he must now call it 3 P. M., Thursday, so as to agree with the places that he is just about to visit. In the north the date line is swerved a little to the west, to include the Aleutian Islands with the rest of the United States; while in the far south it swerves to the east, to include some British islands with the rest of Australasia.

International Law is the name given to the rules which govern either the actions of states in their relation to each other or the relations of citizens of different countries. It is a system created by civilized countries during the last three centuries, and its rules are now in use only among civilized peoples. The increasing intercourse between individuals of different nations by commerce and travel gives a growing importance to the interests affected by this branch of law. Each state may establish, alter or abolish its own constitution; discover and settle new countries; extend its navigation or fisheries; improve its revenues, arts, agriculture and commerce; and develop its national resources by all beneficial and lawful means. In order to do this, the attitude of states to one another must be one of mutual confidence. See *International Law* by Woolsey.

In'terno'de. In seed plants and also in some fern plants the stem exhibits a series of definite joints, at which points the leaves or branches arise. The joints are called the "nodes," and the more or less elongated portions of the stem which separate the nodes from one another are called the internodes. The length of the internodes determines the distance apart of the leaves, and therefore the growth of internodes is an important factor in the life relations of leaves.

In'tersta'te Com'merce Commis'sion, The, of the U. S., is a body of five members chosen according to the provisions of the interstate commerce act of 1887, with powers to regulate railroad rates, to establish uniform rates, to insist upon the publication of accounts and to inquire into infringements of the act. The Constitution vests the power "to regulate commerce . . . among the several states" in Congress, and the Interstate Commerce Commission has been very efficient in preparing statistics of railroad rates, in leading up to the enforcement of state regulations of these rates and in hindering unjust discriminations against certain parties. It was largely through the Interstate Commerce Commission that the new rate bill of 1907 was brought forward by President Roosevelt's administration. The weak point in the powers of the Interstate Commerce Commission was that it had not been able to enforce its injunctions. This led to the passage in 1906 of a law increasing the powers of the commission.

Inven'tions. In the strict use of this word, to which we shall keep, an invention is a mechanical contrivance discovered through which we may realize our purpose more readily than before. The history of inventions is more important than that of wars. There is first the prehistoric age, when man invented the following instruments of his will: Speech, if we may call that an invention; fire, with the arts of heating, lighting and cooking; tools, the axe, the knife, the plough and such weapons as the bow, the sword and the lance; the means of selecting and improving grains and fruits; the taming and training of domestic animals; the making of pottery; of simple clothes; and of musical instruments; the building of tents and houses of wood or stone; wheeled carts and sleighs, boats, to row and to sail. These are prehistoric inventions, which are found in many parts of the world. In some regions the following inventions had been made before the dawn of history: the smelting, working and hardening of metals, irrigation through dams and canals, waterwheels, glass, bricks, various ways of measuring and, finally, writing, with the making of paper, etc. With the last invention history, of course, begins.

It is remarkable that, when men had learned to write, for thousands of years they practically ceased to invent. Between 4,000 B. C. and 1100 A. D. no invention was made equal in importance to the above, but only improvements in minor details. Ships were made larger, clothes were made richer, but the real activity of man was directed towards the things that writing made possible, viz.: society, based on written law, literature, history, science and philosophy. Writing thus made it possible to build up great fortunes, to found permanent empires and to devote the lifetime of gifted men to the fine arts.

The third period in the history of inventions begins with the invention of the compass by European nations about 1200 A. D., of gunpowder about the same time and of printing about 1450. These had been invented in China long before, but the west discovered them independently and made great use of them, to discover America, to shatter feudalism and to reform the church and free men's minds. Since then the great inventions are the pendulum clock by Huyghens (1657), the steam engine by Watts (1769), the electric motor and dynamo by Faraday (1832), gas lighting by Murdock (1792), vaccination by Jenner (1796), the electric light by Davy (1870), the telephone by Bell (1876), the reaping machine by McCormick (1832), the photograph by Daguerre (1839) and spinning machines by Paul (1738). Other inventions that struck out a new line were those of the microscope and telescope, the application of chemical analysis to every branch of manufacture, the production of steel by cheap processes and the means of making exact measurements. But it is hard to identify these with any one man or time.

The development of these fundamental inventions covers every field of modern life. The compound and turbine engine, applied to railroads and to ships, gasoline engines, screw ships of iron and steel, oil and sugar refining, matches, the cottongin, the circular saw, spring clocks, aniline dyes, spectacles, antiseptics, various serums for inoculation, galvanized iron, paper from wood pulp, machines for every purpose from the making of pins to the making of armor plate, the phonograph, the kinetoscope—the list is endless and is ever growing. The study of the history of inventions is one of the best ways to understand modern life.

Investments. The money which is saved by individuals is generally *invested* in some enterprise by which it may at the same time be of some service and yield an increased return. The most common investment is in the banks; but in such a case it is not really the depositor but the banking company which makes the investment. The interest which the bank pays to the depositor is only a part of the return which the bank gains from its investments. These investments may be in such securities as house and land property; or in such industries as mining, railroads or manufactures. It is seldom that a private individual, except in the case of house and land property, controls the whole of the concern in which his money is invested. For the most part he buys some shares in such a concern. Most great railroad and mining companies and many manufacturing establishments are organized into joint-stock companies, from which one receives *dividends* or periodical payments out of the profits, if any, in proportion to the number of shares which one may hold. The *stock* of such companies is sometimes bought merely in the hope of selling at a profit if it should rise in value. This kind of speculation is not worthy of the name of investment. Probably the first and safest investment in most cases is one's own house and land.

Involucre (*ĭn′vō̇-lū-kẽr*), a set of bracts occurring in a rosette, a whorl, or cycle. Bracts are leaves more or less modified, which occur in an inflorescence. In some forms of inflorescence, as in the umbel and head, the numerous pedicels arise from approximately the same point, and as each pedicel is subtended by a bract, the numerous bracts are thrown together in a rosette-like cluster which is called the involucre. A distinct involucre is present, therefore, in the head-like clusters of the composite family, in which case it resembles the calyx of an ordinary flower, and also in the umbels of the great family of umbelliferæ, to which the carrots and parsnips belong.

Io (*ī′ō*), a character in Grecian mythology, was the daughter of Inachus king of Argos, and river-god. She was beautiful, and soon won the love of Jupiter, the Grecian god of the sky, who on account of the jealousy of Juno, his wife, changed Io into a white heifer. Juno appointed Argus, "the all-seeing one," who had one hundred eyes, to watch over her. Mercury, the winged god, was commissioned by Jove to carry off the heifer, and he slew Argus, first charming him to sleep by playing on the flute and then cutting off his head. Juno used the eyes of Argus to decorate the peacock's tail, and sent a gadfly to sting Io. After many wanderings, at the request of Jupiter Io was restored to her former shape, and married King Osiris. After her death she was worshipped as an Egyptian deity, under the name of Isis. The story is given in the *Prometheus* of Æschylus.

Iodine (*ī̇′ō̇-dĭn*), one of the nonmetallic elements, is a black crystalline solid. It is never found in the free state, but occurs in combination, particularly in the ashes of seaweeds and in Chilean saltpeter. It forms a beautiful violet vapor when heated; hence its name comes from a Greek word which signifies this color. Iodine and its compounds, the most important of which is potassium iodide, are used in medicine and photography and by chemists.

See Chemistry.

Iona (*ī-ō′nȧ*), the most famed island of the Hebrides, is situated near Staffa, about one mile west of Mull, and off the coast of Scotland. It is three and one-half miles long, and one and one-half miles broad. The soil is fruitful, the yield being so great per acre that in early days it was regarded as miraculous. The history of Iona begins in 563, when St. Columba, leaving Ireland, landed upon Iona with twelve disciples and built a monastery, which was for long regarded as the mother church of the Picts. The Norsemen razed Iona at the end of the eighth century. In 1203 a Benedictine monastery and nunnery was founded here. In 1506 Iona became the seat of the Scottish bishop of the Hebrides. St. Mary's Church, which had been founded about 1203, became his Cathedral, the grounds of which still exhibit the famous St. Martin's Cross. In 1888 a great Catholic pilgrimage was made to this island.

Ionian Islands, a group or chain of islands numbering about forty, are situated in the Ionian Sea, stretching along the west and south coasts of Greece. The largest islands are Paxo, Corfu, Santa Maura and Ithaca. The total area of the islands is 740 square miles. The surface is generally mountainous, and the plains and valleys fertile. The term Ionian is a modern one. After the division of the Roman Empire these islands were included in the Byzantine Empire. Venice obtained them toward the end of the fourteenth century, and lost them to France when Napoleon conquered the Venetian Republic in 1797. Russia and Turkey seized them in 1798-99, but returned them to France after the Peace of Tilsit in 1807. Great Britain seized part of them in 1809 and 1815, and made them a republic under British protectorate. This government was extremely unpopular, and in 1864 the islands were annexed to Greece. During the World War, the Serbian troops came to the Ionian Islands to rest and refit in January, 1916, after their retreat across the mountains from the Austrians. In April the Allies formed naval bases on the Islands to cope with the submarines of the Central Powers. In the same year Corfu became the seat of the Serbian government. The population of the Ionian Islands, according to the census of 1928, was 213,157. Corfu, the capital of the department of Corfu, and the largest city, had a population of 32,221.

See CORFU.

Ionian Sea, a name anciently given to that part of the Mediterranean which washes the shores of Greece and Epirus, separating them from Italy and Sicily. It is connected with the Adriatic by the Strait of Otranto.

Iowa (*ī'ō-wȧ*), a North Central state, is situated in the great central plateau of the United States. It is often called the heart of America, and the "Hawk-eye State." It was named from the Iowa Indians. Iowa is bounded on the north by Minnesota; on the east by the Mississippi River; on the south by Missouri, and on the west by the Missouri and Big Sioux rivers. It has a rectangular shape, 310 miles from east to west and 205 from north to south. In size, it is twenty-fourth in rank among the states of the Union, covering an area of 56,147 square miles, 561 square miles of which are water.

Surface and Drainage. Iowa is a prairie state, and very level, with a gently rolling surface. Along the rivers the land rises to bluffs and hills, on the eastern and western borders, affording expanses of great scenic beauty. The Mississippi bluffs are especially picturesque. The highest point of land is at Wanita in O'Brien County, in the northwest corner, where the land reaches an elevation of 1,562 feet above sea level. From this point the land slopes gently to the south and southeast, reaching the lowest point in the southeastern corner, near Keokuk, where the elevation is but 400 feet. In spite of this slope, there is a low divide separating streams that flow into the Mississippi from those that flow into the Missouri. There are beautiful trees throughout the State, and the slopes are forested. The oak, cottonwood, walnut, hickory, maple, cedar and elm are the more important native trees.

Over the entire area of the State, with the exception of the extreme northeastern portion, is a deposit of glacial drift consisting of fine rock and fragments varying from a few inches to hundreds of feet in depth. This covering gives the state an unusual variety of fertile soils. There are three distinct kinds: alluvial, consisting of recent deposits, the principal tract being the Missouri bottoms, very fertile; glacial drift, a fine clay and sand loam, also very fertile, covering the greater part of the state; and loess, a fine yellowish sand found in various parts of the State along the margin of drift areas.

The Iowa watershed extends across the State parallel to the Missouri River. The most important river is the Des Moines, flowing across the state in a southeasterly direction to empty into the Mississippi. The Cedar, Iowa, Skunk, Wapsipinican and the Turkey are smaller rivers flowing into the Mississippi. Into the Missouri empty the Big Sioux, Little Sioux, Nishnabotna and Nodaway. In the northern part of the State there are a number of small but very attractive lakes, most of which are popular resorts. Lake Okaboji is said to be the third most beautiful blue lake in the world. It is irregularly shaped and very lovely. Other famed lakes in this vicinity are Spirit Lake, Clear Lake, Silver Lake and Lost Island Lake. Storm Lake has also become famous.

An interesting characteristic of Iowa is the curious caves scattered throughout the State. One of the most fascinating of these is Ice Cave, near the town of Decorah. By a strange freak of nature, this rock cavern reverses the laws of nature, and is warm in winter and below freezing in spring and summer.

Climate. Iowa has a healthful and invigorating climate, of marked uniformity due to the uniform surface and altitude. The winters are cold and usually severe in the north, the summers hot. Sudden changes of temperature are common. Extremes of temperature range from forty degrees below zero to 110 degrees above, with an average of 47.4 degrees. The rainfall averages 30.11 inches, two-thirds of which fall during the crop months from April to October. This fact, with the uniform climate and high summer temperature and fertile soil, is responsible for the agricultural prosperity of the State.

Minerals. The coal beds of Iowa underlie the southern part of the State, extending up the Des Moines and Missouri rivers. These productive bituminous coal fields extend over the area of about 19,000 square miles and are worked by 8,000 miners. Mining operations are carried on chiefly in the Des Moines valley. Nearly all the coal mined is used within the State. Coal is by far the most important mineral in Iowa and its mining is the most important mineral industry. In 1932 there were 3,388,000 tons of coal produced. In the northeastern part of the State near Dubuque are lead deposits, and zinc. Central Iowa is famed for the large deposit of gypsum, which is used as fertilizer and also in making Plaster of Paris. Throughout the State are excellent clays for both brick and pottery manufacture, which have led to important industries. Other minerals include building stone, limestone, ochre, sandstone, and cement. In 1930, the mineral products were valued at $33,357,958.

Production and Industry. Iowa has practically no waste land. The State claims the largest proportion of arable lands of any state in the Union. It is pre-eminently agricultural. Of the 35,575,040 acres of land within the State, 34,019,332 acres were actually contained in 214,928 farms in 1930, of which 22,738,000 acres were under cultivation. The value of all crops, livestock and livestock products marketed in 1930, was $889,522,000. About one-half of the farm land is devoted to growing cereals. Corn is the chief crop. Iowa leads every state in the Union in the production of corn and oats. In 1932, from 11,732,000 acres was produced 539,672,000 bushels of corn;

from 6,212,000 acres, 223,632,000 bushels of corn; from 298,000 acres, 4,898,000 bushels of wheat. Other important crops include barley, rye and buckwheat. In 1932 there were 8,030,000 bushels of potatoes; 225,000 bushels of flaxseed; and 4,668,000 tons of hay produced. The fruit industry is growing in importance. Iowa leads all the states in the Union in the gross income from livestock, and in the number of horses and of swine. On January 1, 1932, there were 996,000 horses and 11,350,000 swine in the State. There were also 1,741,000 dairy cows, 4,185,000 other cattle, 81,000 mules, and 1,398,000 sheep. The wool clip amounted to 7,920,000 pounds in 1931.

The 1929 census of manufacturers reported 3,317 establishments with 82,615 employés earning $103,532,110 and producing goods valued at $907,929,177. The chief industry was wholesale meat packing, with twenty-four establishments having an output valued at $244,725,776. Other industries include butter and cheese making, foundry and machine shops, clay products, lumber, foods, woolen goods and clothing. Iowa sends the larger part of her farm products to other states for manufacture.

Transportation. The transportation facilities in Iowa are highly developed, with railways all over the State. In 1929 there were 9,709 miles of steam and 982 miles of electric railway in operation. No point in the State is more than eight miles from a railway. There is a great volume of river tonnage on the Mississippi, with considerable on the Missouri. The State-maintained roads totalled 7,241 miles in 1930, 6,135 miles of which had been surfaced.

Population. The census of 1930 returned a total population of 2,470,939, which included the population of the Indian Reservation, 389. Of this population, 99.1 per cent were white, the native-born whites being 92.4 per cent of the whole. Foreign-born whites were 6.7 per cent, and Negro 0.7 per cent. Of the total, 39.6 per cent were urban. Des Moines is the capital city, with a 1930 population of 142,559. Other important cities are: Sioux City, 79,183; Davenport, 60,751; Cedar Rapids, 56,097; Waterloo, 46,191, and Council Bluffs, 42,048.

Education. Iowa has a national reputation for excellent schools. The illiteracy in 1930 was only 0.8 per cent, a reduction from 1.1 per cent in 1920, and the lowest in the Union. School attendance is compulsory for twenty-four weeks each year between the ages of seven and sixteen. In 1930, 3,558 public elementary schools had an enrollment of 437,426 pupils and 25,206 teachers, and 917 high schools had 117,229 pupils enrolled and 6,328 teachers. The public normal school enrollment was about 7,000 with 307 teachers. Expenditure on public schools in 1930 amounted to $50,736,526.

There are a number of important institutions of higher learning. The University of Iowa was founded in 1855 at Iowa City, and in 1932 had an enrollment of 8,147 pupils with a faculty of 398. The College of Agriculture at Ames is claimed to be the leading agricultural college in the country. In 1932, it had an enrollment of 5,660 and a faculty of 503. Drake University at Des Moines has 1,613 students and a faculty of 100. The Iowa State Teachers College is nationally known. Other important institutions include Grinnell College, Cornell College, Coe College and Morningside College.

Government. Iowa is divided into ninety-nine counties. The General Assembly includes a Senate of fifty members, elected for four years and half-renewed every two years; and a House of Representatives of 108 members, elected for two years. The Assembly meets biennially for a session of unlimited length. Iowa is represented in the National Congress by two Senators and nine Representatives.

History. In 1673 Marquette and Joliet and in 1680 Hennepin touched the borders of the State. In 1788 Julian Dubuque obtained from the Indians a tract of land, including the present site of Dubuque. He established a trading post and developed the lead mines. Upon his death in 1810 the settlement was abandoned. In 1803 this territory, as part of the Louisiana Purchase, became part of the United States. Until 1838 it formed part of the territories of Louisiana, Missouri, Michigan and Wisconsin in succession. On June 12, 1838, it was organized as a separate territory, and on December 28, 1846, it was admitted into the Union. Fort Madison was erected in 1808, and in 1832 immigrants settled in that vicinity and at Burlington. After the close of the Black Hawk War this territory was settled rapidly. With the revision in 1857 of the Constitution of 1846, the seat of government, which had been moved from Burlington to Iowa City in 1844, was transferred to Des Moines. When the whites first entered this territory, the Sac and Fox Indians occupied the eastern and the Sioux the western portions. The remnants of the former are now maintained on their reservation near Toledo, Tama County, while the latter have entirely disappeared.

Iowa, a tribe of American Indians of the Dakota family, known among themselves by the name of Paducah. Linguistically, they belong to the Sioux. In 1700 they lived on Mankato River, Minnesota, numbering about fifteen hundred, and were often at war with the Osages and other tribes. Their number has been reduced by intemperance, war and disease. The survivors, numbering only 122, are located on reservations in Kansas and Indian Territory.

Iowa River, a river of Iowa, rises near the Minnesota line. It flows southeast for 300 miles, and empties into the Mississippi. It is navigable for small vessels for sixty-six miles to Iowa City. It drains an area of about 12,400 square miles, exclusive of the 7,600 square miles drained by the Cedar River, its chief tributary.

Iphigenia (*ĭf-ĭ-jĕ̇-nī'ȧ*), in Grecian legend, a daughter of Agamemnon and Clytemnestra or, according to others, an adopted daughter. Her father offended Diana, and vowed to make atonement by sacrificing to the goddess the most beautiful thing born within the year. It happened that this was Iphigenia. Agamemnon long delayed the payment of his vow, but at length was commanded by the seer Calchas to keep his promise. When Iphigenia was brought to the altar to be sacrificed, she disappeared, and a hind lay there in her stead, Diana herself having caught her up in a cloud and carried her to Tauris. Here she became a priestess. Her brother, Orestes, found her here and removed her to Attica. The beautiful legend has been made the subject of many Greek poems, and artists and poets have immortalized the name of Iphigenia.

Ipswich (*ĭps'wĭch*), a river port and market town of the county of Suffolk, England, of which it is the capital. It is situated on the River Orwell, at the foot of a range of hills, sixty-four miles northeast of London. The streets are narrow and irregular, and some of the old houses are ornamented with curious carved work. There are large iron and soap factories, breweries, corn mills and shipbuilding docks. The exports are chiefly from these industries. Ipswich was founded in 1633 by John Winthrop. It was twice pillaged by the Danes, received its charter from King John and was twice visited by the plague. In 1687, in resisting the arbitrary tax imposed by Governor Andros, it offered one of the earliest instances of Colonial resistance. The population of the town in 1930 was 5,599; the borough of Ipswich in 1931 had a population of 87,557.

Iquique (*ē̇-kē'-kā*), the port and capital of the Chilean territory of Tarapacá. It has important industries connected with the silver mines and iron mines, and exports saltpeter, borax and iodine. The climate is hot, and pure water is only obtained by distilling. Earthquakes have frequently damaged the town. A battle was fought at Iquique between Peruvians and Chileans in 1879, and in 1891 the town was siezed by the Chileans. The population in 1930 numbered 46,458.

Iranians (*ērän'yans* or *ī-răn'ĭ-ăn*) or **Persians,** a branch of the Indo-European or Aryan family. In early times they peopled the entire country of Persia or Iran, and they are believed to form the connecting link between the Aryan races of Asia and of Europe. Their first appearance in history is as the race of the Medes, 2400 B. C. The Iranians to-day are found west of the Indus River, and include the Afghans, Tajiks, Aimags and the Persian races, Kurds and Armenians. The oldest literature is contained in the sacred books of the Parsees or fire-worshippers, called the Zend-Avesta. Modern Persian is Iranic, with a large mixture of Arabic words.

See Persia.

Iraq (*ē-räk'*) or **Irak**, the kingdom of Mesopotamia, known to the Arabs as *Al* (the) *Iraq*. The country extends over the whole of the Euphrates valley in southwestern Asia. It is bounded on the north by Kurdistan, Turkey; on the east by Persia; on the south by the Persian Gulf and Kuweit, and on the west by the Arabian and Syrian deserts. The actual boundary lines are indeterminate. It covers an area of 177,148 square miles, which comprises the former Turkish vilayets of Bagdad, Basrah and Mosul. The soil is rich and very fertile, as the country is a great alluvial plain for 400 miles north of the Persian Gulf, rising to the rolling hills of Mosul and beyond to the limestone mountains of Kurdistan. The Tigris and the Euphrates rivers cross the country. The climate is subtropical, with rainfall so scanty that vast areas have to be irrigated.

The chief crops are wheat, barley, rice and millet. Tobacco is grown in the Kurdish hills. There is considerable cotton grown, and many dates. In 1930, over 7,153,000 sheep were raised in the north. Wool is an important export. The oil reserves are great. There were 1,200,000 barrels of petroleum produced in 1932. British, Dutch, French and American groups each have quarter interests in the Iraq Petroleum Company, which has struck oil in eleven wells. A twelve-inch pipeline was begun on September 15, 1932, to extend for 1,180 miles across the desert from Kirkuh to Haditha, and there branching to Haifa, Palestine, and Tripoli, Syria.

The total mileage of Iraqi railways in 1932 was 752.70 miles, with an additional 169.86 miles of siding. There are excellent rail connections with England through India. Nearly 5,000 miles of highway, chiefly earthen, have been opened since the World War.

In 1931, there were 324 elementary and primary schools with an enrollment of 43,000 and 1,410 teachers. Three secondary schools enrolled 875 pupils, and eighteen intermediate schools, 1,817.

Iraq is governed by a King, assisted by a Cabinet, a Senate of twenty nominated "elder statesmen," and a Lower House of eighty-eight elected deputies.

Iraq was under Turkish rule until the close of the World War. Then it was created an independent State under the mandate of Great Britain. According to the treaty between Iraq and Great Britain on December 14, 1927, Great Britain proposed the name of Iraq to the League of Nations and the State was admitted on October 4, 1932, at which time the mandate was terminated. The present king is Ghazi, who succeeded his father, Fiesal, first king of Iraq, on September 8, 1933.

The population of Iraq according to the 1920 census, was 2,849,282, consisting chiefly of Arabs, Kurds, and Turks. Bagdad, the capital, had a population of 145,000 in 1920, and an estimated 300,000 in 1930.

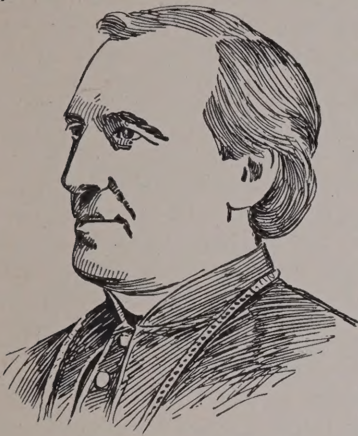
Ireland, an island forming the smaller part of the united Kingdom of Great Britain and Ireland. It is washed on the north, west and south by the Atlantic; and on the east by a strait called at different places the North Channel, the Irish Sea and St. George's Channel. Its length is 302, its breadth 110, miles. The island was known to the Greeks as Ierne and to the Romans as Hibernia. It is divided into the four provinces of Ulster, Leinster, Munster and Connaught, which are separated into thirty-two counties. The total area is 32,605 square miles. The last census gave a population of 4,381,951, a decrease of over nine per cent. since 1881. The coasts are varied, from even and uniform on the east to rocky and uneven on the north, west and south. There are, however, numerous safe bays and excellent harbors. Dangerous headlands are pointed out to mariners by some sixty lighthouses and three floating lights. Down to the middle of the 18th century Ireland was a pastoral country. The soil, however, is in many parts adapted to agriculture. Fishing is carried on to some extent; but, the fisheries are not in a flourishing condition.

Ireland never has been a manufacturing country, though Irish linens are well-known. The exports are largely of grain, flour, butter, eggs, linen and salted meats. The climate is like that of Great Britain. The most important university is that of Dublin, with a teaching staff of 98 and 1,100 students. The history of Ireland abounds in legend and fable, showing a very ancient civilization and showing that the island was occupied by successive invaders, the Phœnicians and Greeks both taking part in its early settlement. The authentic history begins with the life and career of St. Patrick. Saint Patrick was born in Scotland, and in youth was carried as a slave to Ireland. He escaped to Rome, and rose high in the service of the church. Early in the 5th century he returned to Ireland, with the object of converting it to Christianity. He more than accomplished his holy mission, making Ireland the great missionary school from which he sent forth preachers of the faith into all Europe. The Norman invasion took place in 1167, during the reign of Henry II of England. After the conquest the king divided the island into counties, and set up the English courts in Dublin. He made huge grants of land to favorite Norman barons, to hold as they could. So began the great struggle in Ireland, which has lasted down to our own day. The struggle between Normans and Irish filled the period until, in Henry VII's reign, was passed the famous measure known as Poyning's act (1494), which declared that all English laws should have force in Ireland and that the acts of the Irish parliament should be confined to such measures as had been first approved by the king and the privy council in England.

Henry VIII confiscated the church lands in Ireland, as in England, and attempted to force the people to give up the Roman Catholic religion. The Earl of Tyrone, one of the great family of O'Neill, kept up the struggle in the reign of Elizabeth, defeating Essex but yielding to Mountjoy. The Irish rose in rebellion during the Civil War in England, but were conquered by Cromwell, their country, all but Connaught, being given to the English and Scotch settlers and the Irish being driven into Connaught. Under Charles II and James II the struggle continued; while the loyalty of the Irish to James brought upon them the vengeance of William III and the defeat of James II at the battle of the Boyne. The treaty made at the surrender at Limerick was broken, and the penal laws, as they were called, were imposed, with the object of driving Roman Catholicism from the land. The war with America gave the Irish another opportunity to claim their rights, and with Grattan and Flood as leaders they succeeded in 1782 in securing the declaration of the independence of the Irish parliament. After a rebellion, as a result of the anti-Catholic laws, the Irish Parliament was induced to agree to a union with England, like that of Scotland, but the subject of Home Rule has been a burning question in English politics ever since. Yet, while passionately desired by the great mass of the Irish, Home Rule has been violently opposed by the Protestant majority in Ulster, so far as that province is concerned. In 1913, after the introduction of the Asquith "Government of Ireland Bill" in 1912, civil war was not only threatened but prepared for by Ulster. The European War brought a truce between the contending factions, and the Irish, (with the exception of the Sinn Feinn, or "Young Ireland" party who attempted, with German aid, to inaugurate a revolution and establish a republic,) fought with traditional bravery in the cause of the Allies. In 1917, on Lloyd George's (*q. v.*) proposal, an Irish Convention representing the different factions met in Dublin, with closed doors, in an attempt to reach a decision as to the kind of government upon which all could agree.

The Irish Free State.—In 1918 the Sinn Fein party in Ireland startled Britain by announcing that an Irish republic had come into existence, and early in 1919 a "Dail Eirann," or Irish parliament, assembled in Dublin, representing the Sinn Fein. Their leader, Eamonn De Valera, was imprisoned by the British, but escaped and came to America to raise funds. Great disorder and numerous outrages followed in Ireland, and in 1920 the British parliament finally passed a Home Rule bill which established two parliaments in Ireland, one for the South succeeding the republican Dail Eirann but retaining its name, and the other for the North, now known as the Ulster parliament. The executive power in the two Irish areas continued to be vested in the King, and this did not suit the republican or Sinn Fein party, which continued to struggle against the settlement, and maintained an army in the field, until May, 1923, when they finally laid down their arms. Southern Ireland is now known as the Irish Free State, and has a dominion government like that of Canada. *History of an Idea* by Gladstone.

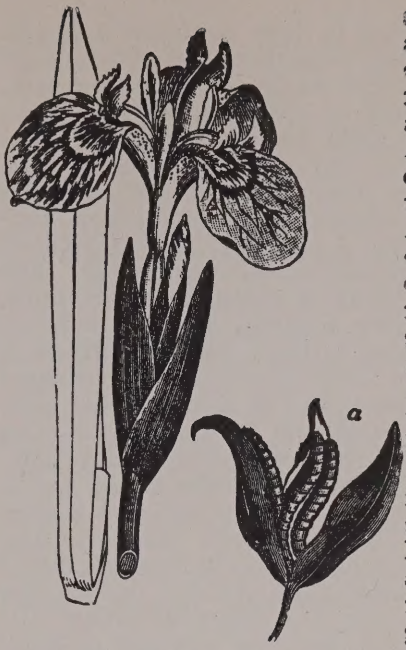
Ire′land, John, an American Catholic prelate, was born in Kilkenny Co., Ireland, Sept. 11, 1838, and came to the United States when quite young. He was ordained a priest at St. Paul, Minn., in 1861, and served as chaplain of a regiment during the Civil War. He was afterward in charge of the cathedral of St. Paul, and in 1875 was made coadjutor-bishop. He was a member of the Vatican Council of 1870, and in 1888 was made archbishop of St. Paul. Bishop Ireland took a very deep interest in the cause of temperance and other public and social questions, and has risen to a position of commanding influence as a wise prelate and a patriotic citizen. He died in 1918.



ARCHBISHOP IRELAND

Ire′ne, a Byzantine empress, once a poor orphan girl of Athens in Greece (born about 752), whose beauty and talents drew the attention and love of Emperor Leo IV. He married her in 769, and after his death she ruled as regent during the minority of her son, Constantine VI. She was banished to Lesbos in 802, where she died in the following year. The Greek church counts her among its saints.

Irid′ium, a metal of the platinum group and found in ores containing platinum, takes its name from its iridescent appearance. It was identified as an element in 1803–4 by Smithson Tennant. Technically, its symbol is Ir., and its atomic weight 193.5. Iridium is used to make hard tips for gold pens, for the vents of cannon and even for surgical instruments. It resists the attacks of the atmosphere and even of the mineral acids; but this useful property makes its separation a difficult process. It makes a valuable alloy with platinum, giving an unrivalled elasticity and durability to this metal, as in the case of the rod deposited in Paris as the standard meter, which is one tenth iridium and nine tenths platinum.



YELLOW IRIS
(*a*) Capsule with Seeds.

I′ris, a genus of plants which gives name to the iris family, and containing about 170 species, which are natives chiefly of the north temperate regions. About 20 species are native to North America, and over 100 species, with innumerable garden forms are to be found in the trade catalogues in America. The irises have a general lily-like appearance, but are readily distinguished from true lilies by their inferior ovary and by their more or less irregular and more complex flowers. Prominent groups in cultivation are (1) the German iris or *fleur-de-lis*, consisting of varieties and hybrids of several species and exhibiting great diversity of color, ranging from pure white through all shades of blue to dark purple, and also with numerous handsome yellow-flowered varieties; (2) the Japan iris, including various forms derived from *I. kaempferi;* (3) the dwarf iris, containing several low species that spread rapidly and form large patches, making them useful as border plants. The *fleur-de-lis* is the national emblem of France; as early as the days of Charles I it appeared on the banners of France. Our common native forms are better known as "flags," most common among which are the large blue flag (*I. versicolor*) and the slender blue flag (*I. prismatica*).

I′rish Sea. The body of water which lies north of Wales, west of England, south of Scotland, east of Ireland. In it are the islands of Man and Anglesea.

Irkutsk (*ĭr-kŏotsk′*), the capital of a province of eastern Siberia of the same name and the residence of the governor-general of eastern Siberia. It is the best built town in Siberia, with straight, wide streets and handsome public buildings, a cathedral, public library and museum. It is the commercial center of Siberia, especially for the tea trade, as it is on the great Siberian highway from Russia to China. It was founded by a Cossack chief in 1652. Population 51,473. See *Century Magazine* for February, 1889. The province has an area of 280,429 square miles and a population of only 674,900.

I'ron, a metal in very common use, and in some of its combinations is found in large quantities, though native iron is very rare. The compounds of iron are found everywhere in the rocks and soil, and to these compounds the red color of rocks, soils, bricks etc. is due. Plants and animals cannot exist without iron, for it is a constituent of the green coloring matter of leaves and the red blood corpuscless. The iron used in trade is more or less impure, often containing carbon, silicon, sulphur and phosphorus. "Pig" iron or cast iron has the most impurities, while wrought iron has the least and is almost pure iron. Steel is intermediate between cast and wrought iron in the amount of foreign matter that it contains. Iron ore, the shape in which iron is found, is abundant and widely distributed. The magnetic ore is the richest, and is found in dark, heavy masses of black crystals. The red ore, brown ore and bog iron ore are other varieties. In the United States iron ore is found in large quantities and in nearly every state. The product of pig iron in the United States far exceeds that of Great Britain, being 27,303,567 long tons in 1910, against the yield in Great Britain of 10,012,098. Pennsylvania is the leading state in the manufacture of iron and steel; Ohio, Alabama and Illinois are also prominent. Tennessee, Virginia and Missouri are rich in iron ore. Iron Mountain in Missouri covers 500 acres, and has large veins of iron ore, though it is not a mountain of iron, as commonly supposed. The iron mines in the neighborhood of Lake Superior form some of the most wonderful deposits in the world. The first blast furnace was worked by William Penn in 1688, and the first rolling mill was started in 1817 at Plumstock, Pa. The best iron in Europe comes from the Dannemora mines in Sweden, which have been worked since the 15th century. Russia, England, Germany, France, Sweden, Belgium, Austria-Hungary, Canada, Spain and Norway are iron-producing countries, The total product of the chief world countries in 1910 was: Pig iron 65,860,000 metric tons; steel 58,252,000 tons; Germany produced nearly a fifth of this total. The manufacture of steel in the United States in 1910 was 26,094,919 long tons.

The manufacture of iron dates back to early periods, and, though the methods have improved, all depend upon the use of furnaces. The Romans in Britain left great heaps of cinders so imperfectly worked that they have supplied much ore for use in modern furnaces. Charcoal was used in the furnaces until 1618, when coal was first tried, but did not come into general use until 1713. In 1750 coke was introduced. The process of puddling and rolling was invented by Cort in 1784, and the use of the hot blast by Neilson in 1830. The greatest improvement of modern times is what is called the Bessemer process for making steel. (See BESSEMER.) The uses of iron are too numerous to mention, and are increasing rapidly. See *Iron, History, Properties and Processes of Manufacture* by Fairbairn; *Manufacture of Iron* by Overman; and Campbell's *Manufactures and Properties of Iron and Steel.* H. L. WELLS.

Iron Age, a term indicating a degree of culture in a people, as shown by their use of iron tools or weapons. It is the latest of the ages called the Stone, Bronze and Iron Ages. But this order is not followed strictly in all parts of the world; for, as in parts of America, the natives seem to have passed from the use of stone to that of iron. When America was discovered, the Indians did not use wrought iron. In Europe the iron age began earlier in the south than in the north. Greece was entering the iron age in the time of Homer; while Scandinavia reached it about the beginning of the Christian era. The tools and weapons of the iron age differ from those of the bronze age in being hammered instead of cast into shape, and in being ornamented with curving instead of with straight lines. But the important distinction is the use of alphabetic characters, which indicate a written language.

Ironclads. See NAVY.

Iron Mask, The Man with the. The story of the prisoner, so-called, has long held its place among the most romantic stories of history. He was supposed to be the duke of Vermandois, a son of Louis XIV and Mdlle de la Vallière. Becoming angry one day, he boxed the ear of his half-brother, the dauphin. For this offense he was imprisoned for life. Voltaire, in his history of Louis XIV, speaks of the young prince as a noble-looking figure, who, in being led from one prison to another, wore an iron mask concealing his face. He was at last transferred to the Bastille, where he was treated with great distinction. He died in 1703. Other theories make this French state prisoner the brother of Louis XIV. See *Age of Louis XIV* by Voltaire.

Iron Mountain. A famous deposit of iron ore gives the name of this mountain, which is situated in St. François County, Mo. The ore is rich and yields 68 per cent. of iron. It is magnetic, and in some places acts strongly on the needle. Its main body has a thickness of 50 feet. Since 1845 over 5,000,000 tons have been shipped.

Iron Mountain, Mich., a city and the county-seat of Dickinson County, is about 57 miles west of Escanaba. Its trade is principally in iron ore and farm products, for the city is in the vicinity of iron mines and Wisconsin farms. It is served by the Chicago, Milwaukee and St. Paul and Chicago and Northwestern railways. Population 9,216.

Ironton, the county-seat of Lawrence County, O., on the Ohio River, 142 miles above Cincinnati. It is the chief business center of an important iron region, which gives employment to numerous furnaces, foundries and other manufactories. The brick and clay industries are quite extensive, and two immense cement plants are located here. Population, 15,000

Ironwood, Mich., a city in Gogebic County, about 33 miles from Ashland, Wis. In the vicinity there are much timber and iron ore, and the section is known as the Gogebic iron region. Ironwood has a city hall, a Carnegie library, a high-school and several churches. It is served by the Wisconsin Central and Chicago and Northwestern railways, and has trolley connection with Bessemer, Gile and Hurley. Population, 18,000

Iroquois (*ĭr'ō-kwoi'*) **Indians,** formerly a great union of Indian tribes, recognized as a distinct branch of the Algonquin family and occupying central New York. In the 17th century they were known as the Five Nations. In 1715 they were joined by the Tuscaroras, when their name was changed to the Six Nations. They never exceeded 15,000 in number, and they still number about 12,000, most of them being in the United States, though some of the tribe are found in Canada. Schools and missions have been established among them, and some of their number have reached distinction as soldiers, engineers etc. Cornplanter, Brant and Red Jacket were Iroquois. See *Brant and Red Jacket* by Eggleston and *The Iroquois* by Johnson, also by Morgan.

Irawadi (*ĭr'ä-wä'dĭ*) (said to mean, like Mississippi, the father of waters), is the great river of Farther India. Its course is nearly due south, and its length is about 1,000 miles. It is superior to the Ganges and Indus for navigation, vessels ascending nearly 800 miles from its mouth. It crosses Burma and enters China on the southwest. In both the Burmese wars it was the chief means of advance for the English armies.

Ir'riga'tion is the artificial application of water to land. Ruins of basins, acqueducts and canals give ample evidence of its extensive use in pre-historic times. Irrigation was practiced among the Assyrians, Babylonians and Phoenicians and China, Egypt and India are noted for the antiquity and the completeness of their systems. Remains of works in Colorado, Utah, New Mexico and Arizona show that the pre-historic inhabitants practiced irrigation and some of their ditches are used in present operations. The Mormons furnished the United States with the first irrigation on a practical scale. In California it was developed in connection with mining. The Union Colony established in Colorado in 1870 made the Greeley District famous for its productions, especially potatoes and alfalfa.

The Spaniards who invaded the country learned irrigation and carried it to their kinsmen in Mexico. In southern California the early missions surrounded their stations with farms made fruitful by watering the parched plains. The wonderful results of these later-day ventures induced the adoption of systems of irrigation in other portions of the regions of insufficient rainfall, and this was largely done by forming colonies, their settlers locating on small, near-by farms and obtaining water from a common source. In this manner increasing areas were brought under cultivation, and such colonies, with individuals, associations and companies, introduced irrigation in many localities. In the 80s millions of money was put into such projects speculatively, but few proved profitable for investors, although they were the means of substantial advancement in extension of irrigation.

Government Reclamation Projects. The whole scheme, however, has become so vast and of such economic importance that state and national governments are more and more assuming its responsibilities. The reclamation act, which became a law in 1902 marked the beginning of a new era in irrigation in America. This provides that the proceeds from the sales of public lands in 13 states and three territories be used in constructing irrigation systems therein. Any lands thus reclaimed are subject to entry only under the provisions of the homestead laws in tracts of not less than 10 nor more than 160 acres, and between these limits the acreage may be restricted by the Secretary of the Interior as his judgment dictates. The settlers are required to pay, in not to exceed ten yearly installments, such amounts per acre as may be equitably apportioned—which in the case of the initial system put in operation was $26—with a view to returning to the reclamation fund the estimated cost of the construction of the projects, which in effect gives free land under the homestead laws and permanent irrigation systems and water at cost, although the title to the sources of supply remains in the government until otherwise provided by Congress. When the payments are made for the major portion of the lands irrigated, the control of the works passes to the owners of the land, to be maintained at their expense under such form of organization and under such rules and regulations as may be acceptable to the Secretary of the Interior. Under this act much work is being accomplished and stupendous schemes undertaken. Extensive engineering projects are under way in several of the states and territories affected by this act, which applies to Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Utah, Washington and Wyoming. The projects already authorized contemplate the ultimate redemption of 2,000,000 acres.

In 1913 water was available from the Government irrigation systems for 1,290,107 acres, and 942,272 acres were under contract to receive water. Conservative engineers estimate that there are 30,000,000 acres of our desert which may be reclaimed.

The Salt River project in Arizona is one of the best known of the Government irrigation projects. Its principal structure is the Roosevelt dam, 280 feet high and 1,125 feet long on top. The storage capacity of the reservoir created by this dam is 1,284,000 acre-feet, or sufficient to cover 1,284,000 acres one foot deep. It supplies water to about 190,000 acres of land in the vicinity of Phoenix, and power created at the dam site is transmitted electrically about 100 miles down the valley to pump water to additional areas.

Gunnison Tunnel, a six-mile bore through the Vernal Mesa in Colorado; Shoshone dam, 328 feet high, in northern Wyoming; and Laguna dam, a weir nearly a mile long across the Colorado River 12 miles above Yuma, Arizona, are other notable engineering works of the Service. A unique pumping project has been built in western North Dakota, where the pumps are placed on floating barges which accommodate themselves to changes in the river banks and in the water level. The pumps force water through pipes with flexible joints to settling basins on the shore. Power is generated with lignite mined from a Government coal mine in the vicinity.

Two of the largest structures erected by the Reclamation Service are under construction at the present time, the Elephant Butte dam near Engle, New Mexico, and the Arrowrock Dam in southern Idaho. The Elephant Butte Dam will be 290 feet high and 1,200 feet long on top. The reservoir created by this dam will have a superficial area of 40,080 acres, and a capacity of 2,627,700 acre-feet. It will serve a double purpose in protecting the lower valley from destructive floods and insuring an ample water supply for 180,000 acres of land in New Mexico, Texas and Mexico. The Arrowrock dam in Boise River canyon will be 350 feet high, and its cubical contents will be about 500,000 cubic yards. Its purpose is to store the flood and excess waters for the irrigation of about 200,000 acres of land in the vicinity of Boise.

A brief summary of the work of the Service shows that it has built 7,961 miles of canals and ditches, 401,000 feet of flumes, 120,000 feet of culverts, and 831,000 feet of pipe lines; its excavations amount to more than 99,000,000 cubic yards; it has built 697 miles of wagon roads and 51 miles of railroad, and has in operation 2,331 miles of telephone lines; it has developed 32,466 horsepower, and built 351 miles of electric transmission lines. Its tunnels have a length of over 22 miles, its canal structures number 50,233, and it has built 3,339 bridges, and 82 miles of dikes. The capacity of its reservoirs amount to 5,051,210 acre-feet.

As a result of this work it is estimated that 100,000 people are already established in homes on the Government projects. Flowing out of the engineering activities are countless beneficial factors which are tending to eliminate isolation, to promote betterment of social and educational conditions, and to dignify agriculture as a profession. Centralized graded schools, trolley lines in the farming sections, country clubs and assembly halls, churches and organizations for producing and marketing products, co-operative creameries, canneries, laundries, etc., are among the numerous agencies being developed to make rural life attractive and complete.

The government aid is not intended to discourage or interfere with a continuance of private enterprise, and the government is supposed to enter only fields where private capital is not strong enough to develop the opportunities properly or where, if left to individuals, the possibilities would be only partly utilized.

Engineering skill has performed wonders in irrigation construction; great dams and reservoirs have been built, mountains tunneled, canyons spanned depressions bridged, rivers diverted, and waters conducted in devious ways for long distances and by these means and by canals been made available to the land. Naturally irrigation has been most associated with arid regions; but when pursued in many of the more humid sections, results have been obtained that proclaim its widespread beneficence.

Storage Reservoirs. The storage reservoir has come to be an essential part of irrigation schemes, and water for this purpose is mostly obtained from streams having their sources in the forests and melting snows of the mountains. In the springtime and early summer these streams are converted into swollen torrents, and in the earlier years their waters hurried to the oceans. unused, but they are being more and more diverted and stored to reclaim the dry lands The early systems depended mostly upon the natural flow of the streams for water-supply, diverted by dams and canals, but in the growing season the streams were lowest, and, when water was most needed it often was not available. This condition resulted in the extensive building of dams and storage reservoirs, in which are collected the flood-waters, thus not only insuring a supply when most needed but making possible the reclamation of vast additional areas hitherto accounted worthless. From these artificial lakes and reservoirs the waters are conducted into main canals and thence through lateral channels to the farms. A feature of the great enterprises undertaken by the government is the erection of works to collect and store these immeasurable flood-waters, making them available for distribution as needed. At the time of the passage of the reclamation act, however, irrigation systems had already been built along nearly every stream in the arid states, and works of considerable magnitude constructed for the storage of floods and the diversion of rivers, irrigating in the aggregate over 7,500,000 acres.

It is estimated that 90 per cent. or more of the irrigated land in the United States is supplied, mostly by gravity, with water from surface streams. The application of water is mostly done by flooding, by furrows and by subirrigation, and for best results skill and judgment are required as to how, when and in what quantities it should be used, which is governed largely by the quality of the soil and the kind of crops raised.

California leads in the number of irrigators and the value of produce from irrigated land, although Colorado has the greatest irrigated area. Of the annual productions on the irrigated farms of the United States forage-crops constitute over one third of the total. Fruits and vegetables are important items, largely grown in favoring localities for winter marketing. The benefits of irrigation are seen in such yields as ten tons per acre of alfalfa per season, five tons of clovers and timothy or the 400 to 500 bushels of Irish potatoes per acre, with the element of uncertainty as to moisture supply practically eliminated. Unless, however, scientific cultivation is given, the best results are not obtained, which applies equally where irrigation is not practiced; and after a field has been watered, following proper cultivation, the top soil should be stirred to aerate the ground and provide a loose, finely pulverized surface, by which excessive evaporation is prevented.

Dry Farming. In this the same principles are involved as in the so-called dry farming so widely exploited in recent years; but these principles are as old as they are excellent and simply mean good tillage, the mode of procedure depending on the requirements of the soils, seasons, climates and crops. It contemplates cultivation of the ground in such manner and at such intervals as will best improve its physical condition and prepare it for the reception and retention of the natural precipitation. By maintaining the surface soil in a proper condition capillary attraction with the moisture beneath is broken, lessening the loss of water — in short such methods of tillage as best promote rapid percolation into and prevent evaporation out of the soil. The conclusions from experiments made in Utah by the United States government are that "under such conditions, with a rainfall averaging 12 inches per annum, dry farming is feasible," although it is claimed that good results have not been infrequent where the precipitation has been even less. Its value is manifest and important to the husbandmen of the semiarid region where irrigation is impracticable or impossible, as with the natural rainfall profitable yields are obtained that otherwise have been impossible, and its increasing adoption is proving most beneficial. Its general principles mean much to every farming community, but are vital to the agriculture of regions deficient in rainfall.

AREAS OF GOVERNMENT PROJECTS

The following table shows the areas of the Government irrigation projects:

Location	Project	Area Acres
Arizona.	Salt River.	230,000
Arizona-Cal.	Yuma.	131,000
California.	Orland.	14,300
Colorado.	Grand Valley.	53,000
Colorado.	Uncompahgre Vy. . .	140,000
Idaho.	Boise.	207,000
Idaho.	Minidoka.	118,000
Montana.	Huntley.	32,400
Montana.	Milk River.	200,000
Montana.	Sun River.	200,000
Montana-N. D.	L. Yellowstone.	60,100
Nebr.-Wyo.	North Platte.	129,200
Nevada.	Truckee-Carson. . . .	206,000
New Mexico.	Carlbad.	20,277
New Mexico.	Hondo.	10,000
New Mexico-Texas. .	Rio Grande.	*156,000
North Dakota.	N. Dak. Pumping . .	26,182
Oregon.	Umatilla.	25,000
Oregon-Cal.	Klamath.	70,700
South Dakota.	Belle Fourche.	100,000
Utah.	Strawberry Valley. .	60,000
Washington.	Okanogan.	10,000
Washington.	Yakima**.	134,000
Wyoming.	Shoshone.	164,000
Total.	. . . .	2,496,159

During the early history of irrigation, farmers naturally confined their efforts mainly to diverting small streams in small valleys if the slope of the country and the topography were such as to make the work easy and cheap. With the values of land then existing no expensive developments were practicable.

The accumulation of alkali on the surface of irrigated lands, which was at first thought a serious detriment, is remedied by underdrainage, and, strange as it may seem to the uninformed, tile drainage appears likely to become not uncommon in many irrigated districts. In fact, irrigation and drainage go hand in hand, and most of the government's irrigation projects provide for elaborate drainage systems. It is anticipated that the advocates of national drainage works for the reclamation of the vast swampland areas of the United States will look to Congress and the Reclamation Bureau to extend the service to include the reclamation of these areas.

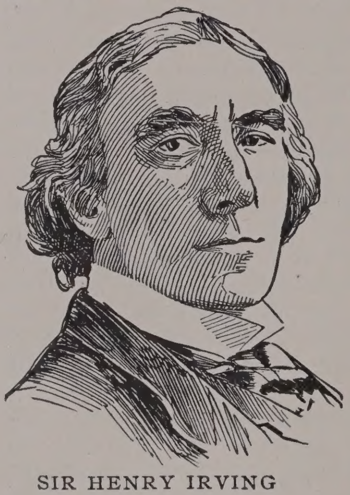
In the arid regions there are yet millions of acres that lack only water to make them productive, already possessing, as they do, the other elements of fruitfulness. In the United States prior to 1870 probably less than 20,000 acres were irrigated; by 1880 the area was probably 50 times greater; and the 13th census showed that in 1909 there were 13,738,485 acres irrigated, representing 158,713 farms, producing crops valued at nearly $181,617,396 of which more than $175,907,232 was credited to the irrigated fields of the 11 arid states of Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming.

The various governmental projects for storing the flood-waters instituted since then, together with the numerous private enterprises, including the improvement, enlargement and extension of canals and better administration of the water supply, promise to make productive wide areas heretofore barren. F. D. Coburn.

Ir'ritabil'ity (in plants). A state or condition of protoplasm in which it undergoes a change in consequence of a change in the neighboring protoplasm or in its surroundings. The change in the surroundings is called a stimulus; the change produced in the protoplasm is called a response or reaction. In plants the reaction follows the stimulus after a perceptible time, seconds (rarely less), minutes or even hours; whereas in most animals the interval (reaction time) is much less. So slow are some plant reactions that the stimulus may cease to act long before any reaction appears. Such late reactions are known as after-effects. The energy of the reaction is often many times that of the stimulus; so, although the sequence is that of cause and effect, the stimulus merely starts the action of protoplasm, which itself is the source of the energy expended in whatever work is done. Since the protoplasm ceases to react after more or less prolonged stimulation, it is supposed that it forms some material which, decomposing under stimulation, becomes exhausted when the stimulus is frequently applied and is only formed again during a period of rest. There are many kinds of stimuli: contact, friction, stress, gravity, light, heat, electricity and chemical substances, including water and air. Only certain parts are sensitive to particular stimuli. The action of the more important stimuli is described under Chemotaxis, Chemotropism, Geotropism, Heliotropism, Hydropism, Phototaxis, Rheotropism and Thermotropism. Through the chemical stimuli, probably, one part of the protoplasm influences another. Thus the change in one region, caused by some external stimulus, may act as a stimulus on neighboring protoplasm. These reactions, however, may be unseen, and a visible change may occur only at a distance from the point where the external stimulus acted. Thus, if a leaflet of the sensitive plant be scorched, all the leaflets of that leaf or even all the leaves on the plant may change their position. In such an event the stimulus is said to be transmitted from the region where it is first applied to the region where a visible response occurs. Nothing is satisfactorily known as to the processes in such transmission. Each kind of sensitiveness exists only under conditions favorable to it; prolonged unfavorable conditions produce disease, more or less severe; if conditions unfavorable to general irritability continue too long, death ensues. Indeed Sachs says: "Life is inconceivable without irritability; the dead organism is dead simply because it has lost its irritability."

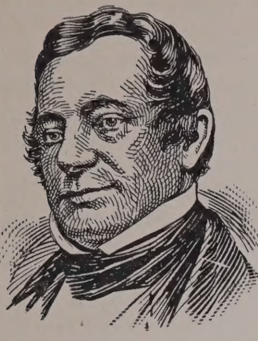
Irtish (*ĭr'tĭsh*), a river of Siberia, the chief branch of the Obi. It rises at the east end of the Altai Mountains, flows toward the northwest for a total distance of 1,620 miles and joins the Obi at Samarow. From April to November it is navigable to Lake Saison.

Irving (*ẽr'vĭng*), **Sir Henry,** a noted English actor, was born at Keinton, England, in 1838. His family name was Brodribb, but by royal license he was permitted to assume the name of Irving. He was educated at London. From an early age he displayed a strong love for the stage, and made his first appearance at Sunderland theater in 1856. In spite of tricks of voice, gait and gesture, he was at the head of English actors of the time, and did much to elevate the drama. He visited the United States several times, and was always received with great enthusiasm. His chief rôles were well known to theatre-goers, especially his Charles I, Hamlet, Macbeth, Richard III and Matthias in *The Bells.* He was knighted in 1895. He died on Oct. 13, 1905



SIR HENRY IRVING

Irving, Wash'ington, one of the best-known of American writers, was born at New York, April 3, 1783. He entered a law office at 16, his health preventing his taking a college course. His father's large library had supplied him with reading, Chaucer and Spenser being his favorite authors. In 1804 he traveled in Europe, meeting Allston, Kemble and Mrs. Siddons. He began writing in 1807, by essays contributed to a periodical called *Salmagundi.* His first large work was *A History of New York from the Beginning of the World to the End of the Dutch Dynasty*, and in it he made use of the quaint manners and customs still to be seen in the New York of his day. He engaged in business with his brother, the while continuing his literary labors, and, on the failure of the firm while he was in England, turned to his pen for a livelihood. The *Sketch Book* had appeared in New York, and Irving made an effort to sell the copyright to Murray and, afterwards, to Constable, the English publishers. Finally, on Sir Walter Scott's recommendation, Murray paid $1,000 for the book, afterward increasing it to $2,000. *Rip Van Winkle, The Legend of Sleepy Hollow* and *Westminster Abbey*, among the *Sketches*, made his reputation. His studies in Spanish history, at the invitation of Everett, then American minister to Spain, resulted in the writing of the *History of Columbus, Conquest of Granada*, the *Alhambra* and *Life of Mahomet*. To these were subsequently added the *Life of Goldsmith* and the *Life of Washington*, his largest work. In 1829 he was secretary to the American legation in England and in 1842 minister to Spain. His home on the Hudson, near Tarrytown, was in the region which his pen had made classic. Here he lived at "Sunnyside," with his nieces. He died on Nov. 28, 1859. See *Life* by P. M. Irving and *Memoir* by Charles Dudley Warner.


WASHINGTON IRVING

Isaac (*ī′zak*) ("he will laugh"), a Hebrew patriarch and pastoral chief, the son of Abraham and Sarah and half-brother of Ishmael. The incidents of his life, as recorded in *Genesis*, are well-known.

Isabella (*ĭz′ȧ-bĕl′ȧ*) **of Castile,** queen of Spain, was born on April 23, 1451, being the daughter of King John II of Castile. In 1469 she married Ferdinand V, surnamed the Catholic, king of Aragon. On the death of Henry IV, her brother, in 1474, she ascended the throne of Castile and Leon. Isabella was a woman of remarkable energy and talent, beautiful and possessed of winning grace, although at times proud and ambitious. She was always present in person at state meetings, and her name was placed with that of Ferdinand at the end of all official documents. She died on Nov. 26, 1504. History relates that Columbus, when he applied at the court of Spain for help in his projected voyage of discovery, failed to receive the sanction or aid of Ferdinand and the learned council. Columbus, discouraged, was about to leave for France, when he suceeded in interesting Isabella in his plan. The king remained indifferent, and pleaded want of funds. The queen in her earnestness exclaimed: "I pledge my jewels to raise the money." Columbus succeeded at last, and to Isabella belongs the honor.

Isabella II, Maria Isabel Luisa, ex-queen of Spain, was born at Madrid in 1830. She was the oldest daughter of Ferdinand VII and Maria Christina. In her third year, by the death of her father, she became queen, her mother being made queen-regent. An insurrection in favor of her uncle, Don Carlos, who sought the crown, at once broke out. For seven years war was carried on with great violence, but was at length checked by the aid of Britain, France and Portugal. On Nov. 10, 1843, she became queen in her own right, though nominally ruler from 1833, and shortly afterwards married her cousin. The chief events of Isabella's reign were efforts on the part of the United States to purchase Cuba; successful war with Morocco; quarrels with Chile and Peru. The nation became more and more impatient under the despotic rule of the last years of Isabella's reign; and, at length, in September, 1868, a revolution broke out, which ended in the formation of a republican government. Isabella fled to France. In 1870 she renounced her claim to the throne in favor of her son, Alfonso XII, who was proclaimed king in 1874. The latter died in 1885, and was succeeded by his son (born in 1886) as Alfonso XIII, the queen-mother (Marie Christina of Austria) acting as regent during the minority of her son.

Isaiah (*ī-zā′yȧ*) ("salvation of God"), the grandest of all Hebrew prophets, was the son of Amos. He spoke his oracles in the reigns of Kings Uzziah Jotham, Ahaz and Hezekiah of Judah, about 740 B. C. Very little is known of Isaiah's life. He seems to have resided at Jerusalem in the vicinity of the temple, was married, and had three sons, who were given, he says, "for signs and wonders in Israel." The period of his death is not known; but by Jewish legend he was sawn asunder by order of King Manasseh. If this be true, Isaiah was nearly 100 years old at the time of his martyrdom. His writings, found in the book that bears his name, are very rich in style and variety. Some people say that *Isaiah* 40-66 was not written by Isaiah. See *Prophets of Israel* by Robertson Smith and *Isaiah* by Driver.

Ischia (*ēs′kē ä*) (the ancient Ænaria), an island on the northern side of the entrance to the Bay of Naples, six miles from the mainland. Its area is about 26 square miles, and its population 22,170. The island has long been a favorite summer resort. It is noted for the excellence of its mineral waters and numerous springs, the great richness of its soil, the exquisite flavor of its fruits and wines and the enchanting character of its scenery. Its highest elevation is the volcano, Mount Epomeo, 2,618 feet above the sea. It is subject to earthquakes. The island produces fruits, wines and olive oil, and the inhabitants carry on extensive fisheries. See *Earthquakes of Ischia* by Johnston-Lavis.

Ish′mael ("God will hear"), the son of Abraham and Hagar, the Egyptian handmaid of Sarah. His story is told in *Genesis*. Mohammed claimed descent from Ishmael.

Ish′peming, a city of Michigan, 15 miles west from Marquette and 367 miles north of Chicago. It is in the center of the Marquette Range of iron ore deposits. The ore is both hard and soft. The soft ore is known as the red hematite and the hard as black band. (Some of these mines run under the city and are famous for their high percentage of iron.) Gold deposits are also found (in close proximity to the city limits). Marble quarries are also being opened. A small part of the ore from this region is reduced to pig iron at Marquette and Gladstone, but most of it passes through the big furnaces at Buffalo and Pittsburg. About 3,000 men are underground every day. Nine nationalities are represented among the miners. The most numerous are Scandinavians, Cornishmen and Finlanders. The population is now 12,448. The Cleveland Cliffs Company of this section received the first prize from the Louisiana Purchase Fair — gold medal for housing the working classes and general welfare. This award was made from the department of social economy, and all countries competed. Ishpeming is said to be the best mining city in the U. S. It is famous for its public schools and the high moral standing of its people.

Isinglass (*ī′zĭn-glȧss*) is the purest commercial form of gelatine. It was formerly obtained only from the common sturgeon, and consisted of the dried air bladder of the fish. The same part in other fishes is also used in its preparation. The commerce in this article was at one time confined to Russia, where the sturgeon is taken, but large quantities are now brought from South America and some from the East Indies, New York and Canada. An inferior kind is made of cod sounds and soleskins or even from skins, hoofs and horns. Isinglass is extensively used in cookery for the preparation of jellies, creams etc. It is also used in refining beer and other liquids and for making the finer kinds of glues and cements. Isinglass is the popular name for mica, a mineral found in large quantities, having a bright luster. It is remarkable for the readiness with which it splits into thin, elastic plates, which are generally transparent. The plates are sometimes not more than the 300,000th part of an inch in thickness, usually very clear. This substance is much used in the manufacture of stoves, its transparency making it valuable. Plates of mica of large size are also used in Siberia, Peru and Mexico as a substitute for glass in windows. Mica is often substituted for glass in lanterns, as it bears sudden changes of temperature better, and in ships of war, as it does not break so easily upon the discharge of cannon.

Isis (*ī-sĭs*), an Egyptian goddess, was the sister and wife of Osiris. Osiris was murdered by Seb, and the corpse placed in a coffin and thrown into the Nile Isis discovered it, and in her grief was herself discovered. Isis lamented so deeply that the youngest of Queen Astarte's sons died of fright. Having buried the coffin in a retired place, Seb discovered the body during her absence, and cut it into pieces which he scattered far and wide. These Isis collected and buried in a stately tomb at Philæ. When she died, her soul was believed to have passed into the star Sirius. Isis is one of the principal figures in Egyptian mythology, and her worship was universal through all Egypt, where her tears were supposed to cause the yearly overflow of of the Nile. In the monuments she is called the goddess-mother, the mistress of heaven, the eye of the sun and the queen of the gods.

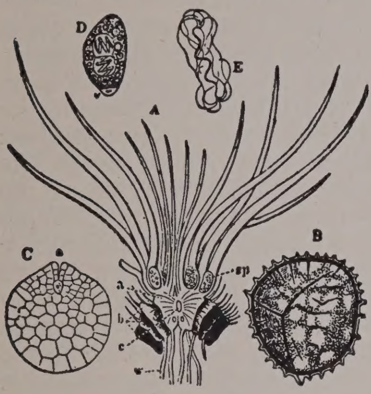
Is′lam. See MOHAMMEDANISM.

Isle of Pines (Spanish *Isla de Piños*), is a fertile island 38 miles from the Cuban coast, lying to the south It is under Cuban government. The island is of a nearly circular shape, its average diameter being over 30 miles. Cattle form the chief article of produce. Good marble is obtained from the quarries. Area: over 1,200 square miles; population: between 3,000 and 4,000.

Isles of Shoals, a cluster of nine barren, rocky islands in the Atlantic off New Hampshire. The largest two are Appledore containing 400 acres, and Star, with 150 acres. On these are large hotels for visitors who resort there for the sea air, bathing and fishing. A steamer runs daily to the islands from Portsmouth. On White Island is a revolving light, 87 feet above the sea. The inhabitants are fishermen. See Celia Thaxter's *Among the Isles of Shoals*.

Isocrates (*ī-sŏk′rȧ-tēz*), one of the ten Attic orators and one of the most remarkable men in the literary history of Greece, was born at Athens in 436 B. C., and died in 338 B. C. Isocrates took no active part in public life. During the Peloponnesian war he lost his fortune, and about 392 adopted the profession of a teacher. He deserves the credit of having been the first to discover this resource. His real vocation was discovered the moment he devoted himself to the work of a teacher and writer. The instruction was based on rhetorical composition, but was by no means merely rhetorical. The celebrity of the school is strikingly attested by ancient writers. It drew disciples from every Greek state. During his later years he wrote on public questions of the day. Conscious of the dangers which threatened Greece, he wrote earnestly in behalf of unity and advocated an invasion of Asia by Greece. The vision of the Greek race "brought under one polity" was not fulfilled as Aristotle or Isocrates saw it. The invasion of Asia by Alexander, however, became the event which actually opened new and larger destinies to the Greek race.

Isoetes (*ī-so′ē-tēz*), a large widely-distributed genus of aquatic plants known as quillworts, which belong to the pteridophytes. By some the genus is put with ferns and by others with club-mosses. It resembles a bunch of fine grass growing in shoal water or mud, but the leaves enlarge at the base and overlap one another on the very short tuberous stem. In each enlarged leaf base there is a single sporangium of interesting structure. Isoetes has attracted much attention because it is neterosporous, and has the general appearance of monocotyledons. There are some who believe that the monocotyledons have been derived from isoetes or from forms closely allied to it.



ISOETES
A quillwort (*A*), showing microspore (*D*), sperm (*E*), megaspore (*B*), and a female gametophyte (*C*) with an archegonium (*a*).

Isogamy (*ī-sŏg′ȧ-mĭ*), a condition in plants in which the sexual cells (gametes) are similar, that is, they cannot be distinguished as male and female, although physiologically unlike. Only the lowest plants are isogamous. The contrasting term is heterogamy.

Isospory (*ī-sŏs′pō-rĭ*). See HOMOSPORY.

Isothermal (*ī-sō-thŭrm′al*) **Line** or **Isotherm.** a term used in meteorology to denote the line obtained by joining all contiguous points having the same temperature. The United States Weather Bureau publishes each month a map of the United States on which are drawn lines connecting adjoining localities which have had the same mean temperature for the past month. These lines are called isotherms. In physics the word is used in a slightly enlarged sense to indicate any curve which represents the manner in which one quantity varies with another *while the temperature remains constant.* Thus the curve which shows how the volume of any given mass of gas changes, when the pressure is altered, is called an *isothermal line.*

Ispahan (*ĭs-pä-hän′*), properly **Isfahan,** a famous city of Persia, capital of the province of Irak-Ajemi and formerly capital of the entire country. It is situated on the Zenderud, in an extensive and fertile plain. It still is an important city, the seat of manufactures of all sorts of woven and ornamental goods, firearms, swordblades, glass and earthenware. Under the caliphs of Bagdad Ispahan was a large trading town; in 1387 it was taken by the Tartar conqueror, Timur, and 70,000 of its citizens massacred; in the seventeenth century it became the capital of Persia, and was a city twenty-four miles in circumference, with 600,000 inhabitants. It was the great city of the east. After the ravaging of the city by the Afghans in 1722, Teheran became the capital. Ispahan is the religious center of Persia, the seat of the high priest. During the World War, Turkish emissaries roused hostility to the Allies in Ispahan. After the murder of the Russian Vice-Consul in May, 1915, the allied nationals left the city, which was occupied by Russian forces in the following year. In 1917, these were replaced by a detachment of the British. The population of Ispahan is estimated at 100,000.

Israel in Egypt, one of the greatest of Händel's nineteen English oratorios, was composed in the fall of 1738. The words are Biblical including "The Song of Moses" in *Exodus* 15. The first performance was on April 4, 1739. The work as originally produced consisted of thirty-nine numbers, twenty-eight of which were massive double choruses—a veritable mountain chain of harmony. The experience of this early performance led to the addition of four recitatives and two airs, which in a measure relieved the continuous strain of listening to such a succession of choruses. It was not until 1931 that the work had its first performance by the *Sing-Akademie* of Berlin and still later (1849), when it was given as first composed, by the Sacred Harmonic Society in England. The reputation of Händel has suffered from the fact that in this oratorio, as elsewhere, he unwarrantably appropriated the work of other composers where it suited his purpose. This reflects less upon his superior genius as a composer than it does upon his rectitude as a man, since in each instance he has "touched (stolen) but to adorn."

Istanbul, formerly **Constantinople,** an important city and formerly the capital of Turkey, is situated at the southern extremity of the Bosporus. It is bounded on the north by the Golden Horn, on the east by the Bosporus, on the south by the Sea of Marmora, and on the west by the Mainland of Turkey. It is built on seven slopes, protected on the western side by fourteen miles of ruined walls, the most famed of which is the double wall of Theodosius II, which dates from 447 A. D. The city is very picturesquely situated and designed, surpassed only by Naples. There are over two hundred beautiful Mosques. One of the most interesting is that of Agia Sofia, a Byzantine structure of about 538, changed to a Mohammedan Mosque in 1453, and to-day second in importance only to that at Mecca. Other outstanding Mosques are those of Achmet, of Solyman the Magnificent, and of Bajazet.

There are long rows of interesting bazaars, around which the street life of the city centers. The old Seraglio, former palace of the Sultan, of extensive gardens and buildings, was replaced by the Serai Humayun, a new palace built near by Sultan Abul-Mejid. The city supports colleges attached to the Mosques, public and provincial schools, and many foreign institutions of higher learning, such as Robert College, an American institution founded in 1863. The principal manufactures are cigarettes, sweetmeats, embroideries, and handmade articles of wood, iron and brass. Cereals, mohair, carpets, silk, opium, wool and hides are exported in large quantities.

In 658 B. C. the city of Byzantium was erected on this site by a colony from Megara, Greeks, Persians, Gauls and Romans fought to possess this commanding site. In 328 A. D. Constantine discovered this fine site and made it his capital, giving it his own name. Almost at once the city became the center of Greek civilization and culture. It suffered more sieges than any other city in the world, but surrendered only three times, twice to the Crusaders in 1203 and 1204, and in 1453 to the Turks under Mohammed II, who established the seat of the Ottoman Empire there. Greek scholars left Europe and took much of the learning of centuries with them. This, added to the denuding of the city of all that was beautiful and treasured in 1204, left Constantinople much poorer. The fall of Constantinople in 1453 closed the direct trade-route to India and the East, and forced the search for a new route to Asia which resulted finally in the discovery of America. In 1908, the Young Turk party staged a revolution in Constantinople and deposed Sultan Abdul Hamid.

During the World War, the disastrous Dardanelles campaign of 1915 was directed at Constantinople. The city was raided by Allied airmen in 1916 and 1917. On April 11, 1920, Angora was declared to be the capital of Turkey, and the removal of the seat of government made a great difference in the importance of the city. The Allies occupied Constantinople until 1923. In 1929 the name of the city was changed to Istanbul. The refugee situation was appalling following the war. Devastating fires have destroyed many buildings. The most striking advance in Istanbul in recent years has been the emancipation of women. The population of Istanbul in 1927 was 690,857.

Italian Literature. See LITERATURE.

Italio-Turkish War. See TURKEY.

Italy (*ĭt'ȧ-lĭ*), a kingdom of southern Europe, comprises a long stretch of peninsular mainland, closely resembling a boot in outline, and a number of islands including Sardinia, Sicily, Elba, and about seventy smaller islands. Italy proper is situated just south of the Alps and occupies the entire peninsula, stretching from them southeast into the Mediterranean Sea. It is separated from Sicily and Sardinia on the west by the Tyrrhenian Sea, and bounded further north by the Ligurian Sea. On the east is the Adriatic Sea. The maximum length of Italy is 760 miles, and the breadth is generally but 100 miles or less, never reaching more than 150 miles. Italy extends over an area of 119,710 square miles.

Surface and Drainage. In northern Italy is the great plain shut in by the Alps and watered by the Po, which flows for 220 miles through this section to empty into the Adriatic Sea. The Ligurian Mountains, circling the Gulf of Genoa, are continued down the middle of the peninsula as the great Apennine chain which gives picturesque grandeur to the country. These mountains have many peaks from 7,000 to 9,000 feet in height, although the mean elevation is only 5,200. The highest point is Monte Corneo, 9,577 feet high. The Apennines run down into the very toe of the boot, with a western volcanic tract from Monte Amiata in Tuscany, to the still active Mt. Vesuvius, 4,300 feet high, with a record of fifty known eruptions. This range continues across the narrow Strait of Messina to Sicily with its famed Mt. Etna rising 10,740 feet, and with a record of over 120 eruptions. North of the Strait is the island volcano Stromboli, 3,022 feet high in the Lipari Islands.

Two rivers of the greatest historic importance rise in the Apennines and flow west to the seas. They are the Yellow Tiber on whose banks Rome, the city of the seven hills, is built; and the Arno, which waters the Florentian plain. In the south are only a few small and unimportant streams. In the north is the longest river, the great Po, which with the Adige and eastern streams rising in the Alps, has built out the land from Ravenna to the Gulf of Trieste with marshes and lagoons especially at the mouth of the Po and in Venice, the beautiful city of canals and lagoons. The Alpine scenery of the north is magnificent. There are many lovely lakes, seven beautiful deep ones lying between the spurs of the Alps, the largest and most famed being Como, Lugano, Maggiore and Garda. The scenery of Italy is world-famed.

Climate. The climate of Italy is famed. It is temperate and very healthful in the north, although often severe in winter. In the central part it is more genial, and in the south almost tropical. It is sunny everywhere. Snow is rarely seen in Naples, and the blue skies of beautiful Italy are celebrated all over the world. This country is one of the most popular winter resorts in the world. The mountains and the sea greatly affect the climate. San Remo, Alassio, Naples, Venice, Sorrento, Capri and Palermo are famed resorts in winter, and Lido, the Lake Region, Lucca, Varese and Vallombrosa in summer.

Minerals. Italy is not rich in mineral deposits, and is lacking particularly in coal. Of anthracite coal, the reserves are estimated at 1,000,000 metric tons, and of lignite, only 280,000 tons. In 1932, 252,000 metric tons of anthracite were mined and 372,000 tons of lignite. Iron and steel production in 1932 amounted to 460,538 tons of pig iron; 1,391,357 tons of raw steel, and 1,355,447 tons of rolled steel. Italy is an important producer of sulphur, chiefly from the volcanic regions of Sicily, having an output of 230,000 tons in 1932. Petroleum production in that year amounted to 210,000 barrels. There were also mined 31,000 tons of lead, 16,600 tons of zinc, and 85,500 tons of bauxite. Italy became the foremost producer of quicksilver in the world when she gained possession of eighteen mines north of Fiume, formerly Austrian. In 1931, she produced 196,000 tons of this mineral. Other minerals include manganese, copper, gold, antimony, mercury and asphalts. From the quarries of Italy come much fine building stone and the famed Carrara marble.

Production and Industry. The chief industry of Italy is agriculture. Of the total land acreage of 76,637,877, in December 1931 there were 70,294,640 acres in agriculture, distributed as follows: cereals, 17,887,438; leguminous plants, 2,255,351; industrial plants, 554,384; vegetables, 1,138,974; vines, 1,954,974; olive trees, 1,499,466; woods and forests, 12,306,125, and forage and pasture, 12,220,603. Harvests in metric tons in 1932 were: wheat, 7,515,100; barley, 251,200; rye, 162,600; oats, 606,800; maize, 3,015,200; rice, 656,600; beans, 591,200; potatoes, 2,823,700, and sugar beets, 2,494,300. In 1932-33 were produced 210,200 tons of olive oil. Wine production is extensive. In 1930, 599,070 tons of chestnuts were harvested. The hemp crop in 1932 amounted to 55,500 tons. Beet sugar to the amount of 323,100 tons was produced. Dairy farming and cheese making are important in northern Italy. The livestock industry centers mainly in cattle, sheep, goats and pigs.

In 1927 there were in Italy 731,447 industrial establishments employing 3,939,960 persons, and 821,666 commercial establishments employing 1,640,290. The cotton industry is the most important. In 1932 there were 5,407,000 spindles, and 150,000 looms, in cotton spinning. There were about 200 silk mills with 24,000 power looms and 3,000 hand looms, which employed from 35,000 to 40,000 workers. There were produced in 1931, 5,393 tons of silk. Gold and silver wares are made in the larger cities, as is also work in bronze. Terra cotta busts and statues of the greatest beauty, Italian cameos, mosaics and Venetian glass are world-famed.

Trade and Finance. An unfavorable trade balance and a decline in exports and imports confronted Italy during 1933. She has encountered extreme competition in world markets, a competition which has become a heavy burden since Italy has but few resources in raw materials. Italy's greatest competitors have been the United States, Great Britain and Japan. In March, 1934, Germany placed new restrictions on imports of raw cotton, hemp, jute and linen. This measure struck deeply at Italian hemp and linen. Italy is expected to retaliate with counter restrictions on German products. In 1933 Italy sold about 35,000,000 lire, ($3,001,250) worth of hemp to Germany.

The pressing situation caused by a development of an unfavorable trade balance, was somewhat relieved by Mussolini's prompt action in ordering a reduction of wages, rents and prices. A similar course was followed in 1930. A lowered cost of production will of necessity follow a reduction in wages. Meanwhile Italy has set about making itself self-sustaining agriculturally, by conducting broad experiments in an attempt to increase production. The experiments now being put under way include the electrical treatment of seeds and the determining exact relation between nutriment and man's capacity for work. The National Research Council, under the supervision of which all experiments are being conducted, has as its president, the famed inventor Guglielmo Marconi. He recently announced the investigations being made into the possibility of raising medicinal plants in Italy so that Italy can cease importing drugs and become an exporter. Several agricultural communities have been placed at the disposal of the Council to carry on investigation and research. One of the most important of these is Littoria, an agricultural community created by Premier Mussolini on reclaimed swamp land.

The annual budget for 1934-35, beginning July 1, reveals an expenditure of 20,636,000,000 lire. An increase of 33,000,000 lire has been voted for educational expenses and an increase of 83,000,000 lire for the Ministry of Agriculture and Corporations. To meet these increases, a reduction of 264,000,000 lire has been made in military items, while the air force has been granted an increase of 14,000,000. The 1934-35 budget discloses an increase of 25,000,000 lire over that of the preceding year. A large bond issue of the Piedmont Telephone Company, in which principal and interest are guaranteed by the government, was recently floated and promptly oversubscribed, an indication that the Treasury of Italy is sound.

Transportation. In 1839 Italy built her first railway, five miles long between Naples and Portici. The state in 1932 owned 10,850 miles of railway, of which 1,300 miles are electrified and carry twenty per cent of the traffic. A further electrification project of 4,100 miles of railway is progressing under a ten-year plan. There are 13,000 miles of state roads, and 100,000 of secondary roads. In 1933 there were 323,826 registered automobiles. On April 15, 1933, Venice opened a new $4,500,000 bridge for motor traffic, stretching two and one-half miles across the lagoon from city to mainland. There is excellent postal and telegraph service, important aviation traffic, and unusual transportation by merchant marine, due to Italy's exposed situation and good ports.

Population. The population of Italy according to the census of 1932 is 41,176,671. This population is not wholly pure Italian. In pre-war Italy there were 85,000 of French origin; 10,000 Teutonic; 81,000 Albanian; 29,000 Greek; 43,000 Slav, and 12,000 Catalons or Spanish. The provinces acquired from Austria after the World War added 215,345 Germans, 326,715 Slovenes, and 141,663 Croats. There are more than 9,000,000 Italians living abroad. The chief cities with their populations in 1931 were: Rome, the capital, 1,008,083; Milan, 992,036; Naples, 839,390; Genoa, 608,096; Turin, 597,260; Palermo, 389,699; Florence, 316,286; Venice, 260,247; Trieste, 249,574; Bologna, 246,280, and Catania, 227,765. There were thirty-two cities with populations ranging between 50,000 and 100,000.

Education. Italy has progressed steadily in combating illiteracy. In 1871 there was sixty-nine per cent of illiteracy; fifty years later, in 1921, it had been reduced to twenty-seven per cent. Education is free and compulsory in the elementary schools to the age of fourteen. In 1931 there were 9,425 primary schools with an enrollment of 745,933 and 25,691 teachers; 93,376 public and private elementary schools with an enrollment of 4,550,184 and 103,961 teachers; 1,223 State secondary schools with 2,308,847 pupils and 13,096 teachers, and 612 private secondary schools with 6,000 teachers. There are ten universities dating from the thirteenth century and early fourteenth. Among the most famous with the number of students in 1931 are Bologna (1200), 2,232; Genoa (1243), 1,229; Naples (1224), 5,067; Padua (1222), 2,184; Pavia (1300), 1,001; Pisa (1338), 890, and Rome (1303), 4,952. In 1931, there were twenty-five universities, and many special technical and professional schools.

Government. The present constitution of Italy is an expansion of the statute granted on March 4, 1848, by King Charles Albert to Sardinia. The executive power rests in the King; the legislative power rests jointly in King and Parliament. The Parliament consists of the Senate or Upper Chamber and the lower Chamber of Deputies. The King acts through a responsible ministry, of which the Prime Minister is chief. The Grand Council of Fascism, according to a law enacted in 1928, is the supreme body which "controls all the activities of the regime."

Foreign Policy. Since the close of the World War Italy has adopted a policy of friendship with Austria. On March 19, Premier Mussolini declared Italy's intention of continuing that policy. "Austria knows we can be depended upon to defend her independence and we will do all we can to help her economically." Il Duce defined Italy's relations with Yugoslavia as being "diplomatically correct but nothing more." Although general relations with France have shown signs of improvement yet none of the problems which have existed between the two nations for the past fifteen years have been solved. "Between Hungary and Italy there is comprehension and solidarity." Relations with Germany are strained and although Mussolini failed to make any reference to that country it is believed that Italy is attempting to negotiate some compromise with Germany on the subject of Austria.

The reform of the League of Nations in "its constitution, functioning and objectives" was demanded by Italy in December, 1933. Today, according to Mussolini, that reform "has almost universally been accepted and will be made when disarmament is settled." Heavily armed states will not now disarm. An Italian memorandum states that problem in all its reality. "If nations will not disarm they can not logically oppose the parity of arms required by Germany. They cannot pretend to disarm people like the Germans." It is an impossibility to keep Germany eternally disarmed. "Europe has need of mutual comprehension or it is heading for its twilight."

Defense. Many accusations have been made against Il Duce all of the same portent, that is to say, he is trying to extend his Fascistic régime to other countries. This claim is most emphatically denied by the Italian Premier. Mussolini does concede, however, that if by Fascism his neighbors refer to a "reconciliation of labor and capital, then fascism is an exportable product." He cites the results of the Spanish election and the American-Russian agreement as an indication of the far-reaching power of Fascism. Taking into consideration the general situation in Europe to-day Mussolini declares that Italy cannot possibly reduce her military expenditure. To successfully pursue her program of internal expansion, Italy must be strong. Italy will not attack, says Il Duce, but will be "ready for any eventuality. Peace will be secured by friendly relations between Italy and other people, but also by our fortified frontier, our military means and organic unity, our arms." A sweeping program for the strengthening of the Italian air force was recently adopted by Mussolini. Secretary of War, General Guiseppe Valle, appealed to his countrymen to "dedicate at least one son to the air service." Two Fascist Youth organizations, the *Balilla,* and the *Avanguardisti,* which boast of 2,000,000 members, are to be organized and supervised (in military training) by 100,000 officers. In an attempt to build up the reserve corps, officers of the Fascist militia will teach their young charges and "prepare them for possible emergencies."

History. The early history of Italy is that of Rome. For sixty-four years after the invasion of the Goths they ruled in Italy, Teias, the last of the Gothic kings, being slain in battle about 553. The country then was divided, belonging now to the eastern and now to the western empire, with independent duchies and free cities. Eight kings of the Carlovingian liner ruled in northern Italy until 887, followed by Italian sovereigns or dukes until, in 961, Otto was crowned king of Italy and emperor of Rome. For two centuries the right to the crown of the Roman empire belonged to the German kingship. There was no Italian kingdom except in name, and with her foreign emperors living beyond the Alps, the country was left without a head. The struggles for supremacy between counts, between popes and emperors and between cities, in the quarrels of the Guelphs and Ghibellines, continued for centuries. In 1177, at Venice, after the defeat of Legnano, Frederick Barbarossa the emperor agreed to a six years' truce and in 1183 he made a treaty of peace with the Lombard towns. With the capture of Constantinople in 1204 Venice gained large territories as reward for her services and became supreme in the Levant. In 1278 the popes were recognized as temporal sovereigns, and their power over Rome established. In 1309 the seat of the papacy was removed to Avignon, where it remained for seventy years. In the fourteenth and fifteenth centuries Italy was divided among five powers—the kingdom of Naples, the duchy of Milan, the republics of Florence and Venice and the papacy; the Medici family flourished; the papacy was restored to Rome; and Florence as a republic acknowledged the influence of Savonarola. The sixteenth century was the most disastrous in Italian history. The rivalry of Charles V and Francis I filled the land with foreign armies, the papacy being the gainer from the struggles. Francis I was driven out of Italy; Rome was sacked in 1527, the sack lasting seven months; the Medici were driven out, restored and made grand-dukes of Tuscany. In 1529 the peace of Cambrai left Charles V master of Italy, and the peace of Château Cambray in 1559 made his son, Philip, its undisputed lord. The papacy was strengthened by the founding of the order of Jesuits, the Inquisition and additions to its territory; and Venice made her last great achievement in a war that had lasted five centuries by the conquest of the Peloponnesus in 1684. After each of three European wars of the eighteenth century Italy was divided afresh. Napoleon entered Italy in 1796, reconquered it at Marengo in 1800, and was crowned king of Italy in 1805. The congress of Vienna in 1815 restored Italy to its former state. The year of revolution, 1848, opened with the party of Mazzini supreme. Pope Pius IX became a fugitive, and Garibaldi was in the field. Rome and Venice yielded to French armies, the pope and other petty sovereigns of Italy returned, and the revolution proved a failure. But Victor Emmanuel, Cavour and Garibaldi were ready for the coming struggle. Cavour made terms with Louis Napoleon, and the French and Italian troops won the battles of Magenta and Solferino, driving Austria to the east. In February, 1861, the first Italian parliament met at Turin, and Victor Emmanuel was proclaimed king of Italy. Venice was restored in 1866, and on September 20, 1870, the king entered Rome and the emancipation of Italy was complete. The Pope retained the Vatican, the church of Santa Maria Maggiore, the Lateran palace and the villa of Castel Gandolfo, and was given an income of $750,000 out of the revenues of the state. Italy, free and united, has become one of the great European powers. In 1878 Victor Emmanuel died, and his son Humbert I succeeded him. In July, 1900, Humbert was unhappily assassinated and was succeeded by the Prince of Naples, his son, who rules as Victor Emmanuel III. In 1911, Italy declared war upon Turkey and seized Tripoli, the war continuing until October 18, 1912, and resulting in a victory for Italy. In 1882 Italy was induced to join Germany and Austria in the Dreibund but refused to support her Allies in the World War. Following the World War, Italy received the important seaport of Trieste on the Adriatic. Fiume, near Trieste, was made a free port, but became an Italian city in March 1924, when a treaty was confirmed between Italy and Yugoslavia, Yugoslavia receiving Porto Barros. In the same year Italy received the former British African territory of Jubaland, lying along the eastern coast. This territory had been promised to her if Great Britain should receive any German territory following the war. The period of readjustment immediately after the war was fraught with many crises, not the least of which was bolshevism, put down by the fascisti and their leader, Mussolini.

The major ambition of Benito Mussolini and the Fascist Grand Council at Rome to establish an Italian Corporate State is nearing complete realization. In 1926 thirteen syndicates or associations, grouped into corporations representative of both capital and labor, were recognized. In 1927 Premier Mussolini promulgated the "Fascist Charter of Labor," which clearly asserts the State's undisputed right directly to control all forces of production and to maintain peace between labor and capital. In the early part of 1934 Il Duce issued a decree which withdrew all political and parliamentary control of corporations and empowered the various corporations or guilds to create laws on all economic matters peculiar to their individual activities. The decisions or laws of these bodies, must, however, be approved by the Fascist Grand Council and Premier Mussolini. According to Mussolini, the Italian Corporate State "retains and protects property but elevates its use to social functions and directs private initiative toward the needs of national life and economy." It embraces neither liberalism nor Marxian socialism, but as a result of several years of experiment "establishes a balance between private initiative and the interest of society as a whole." The Corporations Bill was enacted at the final meeting of the Chamber of Deputies on January 18. This legislative body, which has been harmless enough to Fascism and has even endorsed several important measures, will be replaced by the National Council of Corporations. In the future the basis of all Italian political and economic organization will be the Italian Corporate State. Parliamentarianism will be supplanted by a "corporative system." The election of a new Chamber was held on March 25. The elections were preceded by several important events in Italy which caused world-wide comment.

On March 17, a three power consultative pact was signed at Rome by Chancellor Engelbert Dollfuss of Austria, Premier Goemboes of Hungary and Benito Mussolini, which laid the basis for a general political consolidation and economic improvement. A few weeks previously Premier Mussolini called a three-power conference between Italy, Austria and Hungary for the express purpose of discussing and formulating the principles for an agreement which would assure the economic restoration of the Danubian Basin. The preparations for this parley were being eagerly watched by Germany and other nations. This conference convened in Rome on March 13. The negotiations were concluded on March 17, and the three premiers affixed their signatures to three consultative pacts. One of the protocols was political in content and at some later date will be offered to other interested European nations that are desirous of collaborating in a program which will ensure peace and commercial coöperation. Two of the agreements are commercial pacts designed primarily to form a basis for a more extensive agreement between the Danubian states. The protocols signed were a result of Germany's efforts to control the Danubian Valley and especially to effect *Anschluss* or union with Austria. Although Austria is a German nation and hopes to maintain friendly relations and coöperation with Germany, Austria is most anxious to preserve its independence. The preservation of this independence was the aim of Mussolini in concluding such a pact and it is expected that as a result of the Rome protocol, Austria's independence will be held consolidated.

The major effect of the pact is to bind Austria to confer with Italy prior to making any move which might betray its independence, as for instance, *Anschluss* with Germany most certainly would. The chief features of the pact are:

1. The three powers will work together politically.

2. They will consult one another before taking any political action whatever.

3. Italy, Austria and Hungary will widen their existing commercial accords.

4. Hungary's agricultural difficulties will be settled.

5. All three countries will facilitate traffic movement through the Adriatic ports.

6. A permanent economic commission will watch commercial developments of the three countries.

7. Preferential treatment for Austrian manufacturers in the Italian market will be accorded by later action.

The three power pact was received with a diversity of opinion in the various capitals of Europe, although a marked coolness seemed to be dominant in all diplomatic circles. In Berlin officials were inclined to interpret the Italian pact as a manifestation of Italy's sympathy for Austria. Although Italy has invited the coöperation of other nations, Germany finds it impossible to sanction such an agreement, because, to do so would mean giving up hope of *Anschluss* with Austria. France, Great Britain and the Little Entente looked with disapproval upon the pact due to the political agreements accompanying the triangular trade accord. The Little Entente finds it impossible to accept the pact as a step toward a general Danubian trade agreement since the pact commits Italy to the support of Hungary's demands for boundary revision, a program vehemently opposed by the Little Entente. These powers do, however, recognize Mussolini's action as a "distinct diplomatic coup." They have accepted Mussolini's initiative as "a lesser evil, in view of Germany's steadily growing economic power in the Balkans."

On March 19, just a week before the five year elections, Premier Mussolini addressed the quinquennial assembly of the Fascist régime in the Rome Opera House. Here he disclosed a program for Italian primacy, a sixty year program directed towards internal and external expansion. Il Duce pointed out that this expansion is to be a "natural" rather than a "territorial" expansion beyond the Mediterranean. "Italy has no future in the west or north. Her future lies to the east and south in Asia and Africa. The vast resources of Africa must be valorized and Africa brought within the civilized circle." Mussolini also made it quite clear that no interference with Italian expansion in these areas by nations that have already arrived in Africa would be tolerated by Italy. This warning was issued in particular to France.

The program for internal expansion endorses the completion by 1940 of swamp reclamation; new aqueducts and highways; plans to recreate Italian municipalities, and the rebuilding a half a million rural homes and repairs to nearly a million rural houses. The work in rural areas will occupy a period of about thirty years. Il Duce pointed out that only by making rural areas more livable can "the rush to the city be combatted."

One of the most important features of Mussolini's address was the distinction which he brought out between positive and negative Fascism. He declared that Fascism "became universal in 1929." Today positive Fascism "knows how to destroy the old and rebuild the new, whereas negative Fascism knows only how to destroy." He declared that the world today is reaching out towards new forms of civilization, both politically and economically and it is inevitable then that parliamentarianism should be superseded by a "corporative system."

Itch or **Scabies,** an itching contagious eruption of the skin which is caused by a minute parasitic mite burrowing and breeding in the skin. The form of parasite which infests human beings is about one-sixtieth of an inch long. It has a round-ovate body, needlelike mandibles, and three-jointed legs. By forming tiny galleries in the epidermis, it keeps up a constant irritation which is a source of great annoyance and suffering to the striken individual. The disease is generally characterized by the appearance of small isolated auminated vesicles, a scaly elevation of the skin, and by the irritating itching. The parasite causing the eruption may be transmitted to other individuals by direct contact or by means of clothing or bedding. Most domestic animals carry an allied form of the mite, and many wild animals are infested. Humans may contract the infection from these sources. In its most severe form, Norway itch, an extensive shedding of the skin in either flakes or scales occurs.

Ithaca now **Thiaki,** one of the Ionian Islands, is situated about twenty miles west of the mainland of Greece. It is separated from Cephalonia, which lies to the east, by a narrow channel. The island extends over an area of thirty-six square miles, most of which is mountainous. The coast is steep and rocky. The principal products of Ithaca are olives, grapes, and currants. Many vineyards and orchards cover the mountain sides. Fishing is an important occupation of the inhabitants. The chief industry is the making of olive oil. Ithaca is important in history and literature as the supposed site of the castle of Ulysses, the hero of the *Odyssey* of Homer. For long this story was thought to be chiefly legend, but excavations in Ithaca were made by Schliemann in 1869, which corroborated sites that were named by Homer. The population of Vathy, the chief town of Ithaca, is about 5,000.

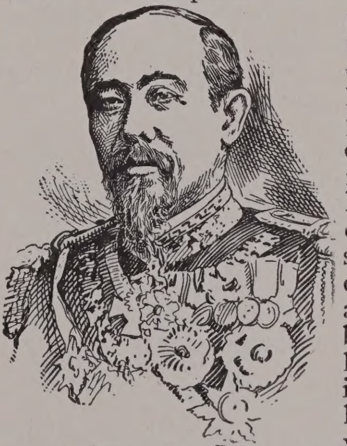
Ithaca (*ĭth'ȧ-kȧ*), a city and the seat of Tompkins County, New York, is situated on Cayuga Lake near its southern tip, and on the slopes of the neighboring hills, about forty-eight miles southwest of Syracuse. Ithaca is a picturesque city spreading up from a level valley to heights in the south, east and west. The beautiful Finger Lake Region surrounds the city. Within the city limits are cascades, deep gorges and colorful waterfalls. The magnificent Taughannock waterfall in the vicinity is famous for its beauty.

Ithaca lies in the heart of a rich agricultural area. It is an important distributing point for coal from the Pennsylvania mines. The principal manufactures of the city include traction engines, firearms, furniture, cement, cigars, portable houses, incubators, and wall-paper. There are numerous foundries, mills and factories within the confines of the city. Ithaca's favorable location has furthered her growth. There are excellent steamboat connections, and also good transportation facilities by air and by rail. These advantages have resulted in making of this city, primarily an educational center, a trade center also. Ithaca is an important shipping point for agricultural and dairy products.

The city maintains an excellent and efficient public school system. It is also the seat of Cornell University, the State College of Agriculture, and the Ithaca Conservatory of Music. In 1932 the Frank Boynton Junior High School was formally opened with complete modern facilities, including administrative offices, a health suite, home economic rooms, shops, cafeteria, library, science rooms, music studios, gymnasium, and a studio wired for radio and sound motion pictures. In November, 1929, provisions were made for the retirement of teachers by the Ithaca Board of Education, retirement salaries to be the same as those drawn in the last years of active service.

Ithaca was settled in 1789, and received its present name in 1806. It was chartered as a city in 1858. The city was at one time an important canal port, and port of lading for barges on the Erie Canal. This traffic, however, declined after additional railway facilities were secured. Among the places of scenic interest in Ithaca are Renwick Park, situated at the head of Cayuga Lake, Fall Creek Gorge, and Ithaca Falls. An Indian Village once occupied the site of Ithaca.

The population in 1930 was 20,708.



Marquis Ito

Ito (*ē'tō*), **Hirobumi,** Marquis, a Japanese statesman and prime minister, was born in the province of Choshu in 1841. He was educated in England under the patronage of the daimo Mari. During his stay in Europe he became convinced of the superiority of western civilization and after that time he became one of the leaders in westernizing his native land. In 1871 he visited the United States to investigate the coinage system, and upon his return to Japan he assisted in establishing the mint at Osaka. On a second trip to Europe in 1880 he was favorably impressed with the German methods of government, and his attempts to introduce them into his own country earned for him the name of the Japanese Bismarck. In 1886 he assumed the leading place in the Japanese cabinet, and, under the title of minister president of state, instituted sweeping economical reforms, and during the next two years everything was done to make Japan the Asiatic counterpart of the German empire. A reaction in 1888 resulted in Ito's retirement from the premiership, to which, however, he was recalled in 1892. In the war with China in 1894–95 he played a leading part, being premier of the empire and high admiral of the Japanese fleet. In recognition of his services he was made a marquis. He was prominent in the conduct of the Russo-Japanese war and later was resident-general of Korea. He was assassinated by a Korean at Harbin, Manchuria, Oct. 26, 1909

Iturbide (*ē′tōōr-bē′thȧ*), **Don Augustin,** emperor of Mexico, was the son of a Biscayan nobleman and a rich Creole. He was born at Valladolid, Mexico, in 1783. In May, 1822, he ascended the throne of Mexico as emperor, under the name of Augustin I, and the congress declared the crown hereditary in his family. He was rather a despotic sovereign. His reign was full of trouble, and came to an end in less than a year by his abdication of the throne, March 20, 1823. He was banished to Italy with a pension. He attempted in 1824 to regain his crown, and was shot.

I′tys, in Greek mythology, son of Procne and Tereus. After the birth of Itys, Tereus concealed Procne in the country, that he might marry her sister Philomela, whom he deceived by saying Procne was dead. At the same time he deprived Philomela of her tongue. She, however, soon found out the truth, and made it known to her sister by a few words which she wove into a peplus. Procne thereupon killed her own son, Itys, and served up the child's flesh in a dish before Tereus. She then fled with her sister. When Tereus was about to overtake the fleeing sisters, the gods, in answer to their prayer, changed all three into birds: Tereus into a hoopoe or hawk, Philomela into a swallow and Procne into a nightingale, which from that time to this has never ceased to cry: "Itys, Itys."

I′vaine, also spelt Yvain and Ywaine. Sir Ivaine was a knight of King Arthur's Round Table. See *Idylls of the King*.

Ivan (*ē-vȧn′*), the Russian form of John, is the name of a number of Russian czars.

IVAN (or Joaan, *i.e.*, John) I, grand-duke of Moscow from 1328 to 1340, was surnamed Kalita, in allusion to the purse which he always carried at his girdle. The importance of Ivan in Russian history is that he was the consolidator of the power of Moscow, the nucleus out of which the empire was to be formed at a future period.

IVAN III, surnamed the Great, grand-duke from 1462 to 1505, forms one of the most important figures in the annals of Russia, for to him is due the consolidation of the autocracy (*i.e.*, absolute and independent power). His long reign of 43 years was very beneficial to his country. He was a skillful diplomatist, and often brought about by intrigue what others could effect only by force of arms. In 1472 he married Sophia, niece of Constantine Palæologus. On account of this union Ivan considered himself the heir of the Byzantine emperors, and adopted the two-headed eagle for his arms. Embassies were sent to foreign powers. Italian architects were invited into Russia. Many learned monks found refuge there from the yoke of the Turk.

IVAN IV, called the Terrible, is the best known. He reigned as czar from 1533 to 1584. While his reign was marked by many improvements in the arts and sciences and in the advancement of the wealth and prosperity of his kingdom, his name was a terror to most of his subjects. The first printing-press in Russia he established. He was cruel and heartless, and in some of his towns large numbers were killed. In Novgorod, during the latter part of his reign, 60,000 people were slain in six weeks. Ivan died of sorrow for his son, whom three years before he had slain in a mad fit of anger. He was the first Russian sovereign to be crowned as czar, and from his reign dates the annexation of Siberia. A plot was discovered to deliver parts of his territory into the hands of the king of Poland, and it was to revenge this treason that he executed large numbers both of the innocent and guilty. See *Ivan the Terrible* by Pember.

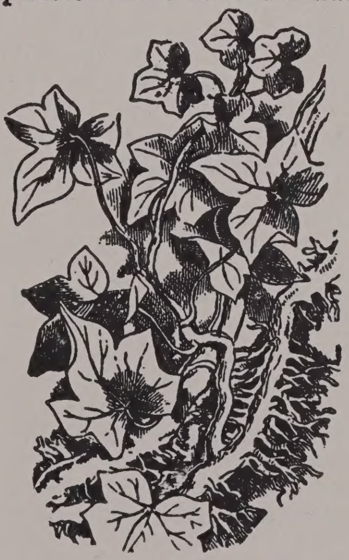
I′vanhoe, one of the best of the novels of Sir Walter Scott, was published by him in 1819. The book takes the hero's name. Ivanhoe is the son of a Saxon freeholder who has not lost his mistrust of the Normans nor his own independence. Ivanhoe himself, however, is well-versed in Norman arms and manners; and in the Holy Land has been the bravest of the warriors of the lion-hearted Richard I of England. His return in the guise of a pilgrim, his victory in the admirably described tournament, his adventures, together with those of his royal master, and a motley but representative assemblage of characters (including the sluggish but powerful Saxon Athelstan, the greedy Norman Baron Front-de-Boeuf, the Templar Brian-de-Bois-Guilbert, the old Jew Isaac and his brave and lovely danghter Rebecca, the outlaw Robin Hood, the hedge-priest Friar Tuck, the swine-herd Gurth and the jester Wamba) make *Ivanhoe* one of the most delightful tales of the early middle ages written by any modern novelist.

I′vory, the name given to the tooth-substance of all animals, but now only used of the teeth and tusks of the elephant, which are of the character of true ivory. Many other animals, however, possess teeth, horns or tusks, which, from their large size and density, can be used for the same pur poses as true ivory. Some of these are the walrus, narwhal, hippopotamus and rhinoceros. The ivory of the tusks of the African elephant is held in the highest estimation by the manufacturer, on account of its pure whiteness and its density. The tusks are of all sizes, from a few ounces in weight to more than 180 pounds each. Some have been known to weigh as much as 200 pounds. Elephant tusks have from very early periods been an important article of trade, because of their great beauty as material for ornaments and in works of fine art. A small part of the ivory of commerce comes from Ceylon, India, Burma and the islands of the Indian archipelago. The greater part is obtained from the African elephants, and the traffic in ivory was the main support of the slave trade in that country. Fossil ivory is found in small quantities in Siberia, being the tusks of the extinct mammoth. The price of pure ivory is from about $250 to $300 per hundredweight. The quantity imported each year into Europe is about 12,500 hundredweight, which must require the sacrifice of nearly 40,000 elephants. The elephants are killed in the interior of Africa, and the ivory conveyed to the coast (formerly) on the backs of slaves. Ivory is in chief demand for knife and other handles, combs, piano keys, billiard balls and chessmen, and is carved into figures and ornaments. The use of ivory can be traced almost to the earliest period when man existed. We read that King Solomon "made a great throne of ivory." There still exist examples of Egyptian ivory, inlaid, as ancient as the days of Moses. In the British Museum are many Assyrian ivory carvings, made in Nineveh nearly 1,000 years before Christ. In ancient Greece ivory was used for carvings, sculpture and various objects of luxury. Many of the most famous works of Pheidias and his fellow artists were statues built of plates of ivory and gold, some figures being 40 feet in height.

I'vory Coast, French. A dependency of France in Africa, acquired in 1843, but not actively and continuously occupied till 1883. It lies between Liberia and the Gold Coast colony of Great Britain in French West Africa. Area 12,000 square miles, with a population estimated at two millions. It extends inland from the coast to the military territory in French Sudan. The chief exports are palm oil, india-rubber and gold. Coffee and rice are also cultivated. The capital and chief port is Grand Bassam, while the seat of administration is now Bingerville. This place was formerly called Adjame, and is being improved by extensive building operations, and gold mining is assuming importance. The harbor works at Port Bouet, formerly Petit Bassam, are begun, and the railway from Abijean on the other side of the lagoon will have its first stretch of 110 miles to Eryman Konguié finished in 1908. Telegraph lines run between the principal towns, and the telephone is in operation from Bassam to Bingerville and elsewhere. The colony is self-supporting, income and outgo in 1911 being about 5,474,000 francs.

Ivory, Vegetable. This curious material is furnished by a palm-like plant, which grows on the Andean plains of Peru, on the banks of the Magdalena and in other parts of South America. It forms the type of a natural order of plants, intermediate between the palms and the screw pines. The plant throws up a magnificent tuft of light-green, pinnated leaves of extraordinary size and beauty, like immense ostrich-feathers rising from 30 to 40 feet in height. The fruit, which is as large as a man's head, consists of many, four-celled, leathery drupes massed together, and contains numerous nuts of a somewhat triangular form, each nut being nearly as large as a hen's egg; they are called corozonuts in commerce. The kernels of these nuts when ripe are exceedingly hard and white; in fact, they resemble ivory so completely that few names have ever been better applied than that of vegetable ivory. They are in extensive use by turners in the manufacture of such articles as buttons, umbrella handles and small trinkets.

I'vy, a name applied to a variety of woody plants which have the habit of climbing by means of sucker-like discs, so that they can attach themselves to walls and other vertical surfaces. This habit makes the plants valuable in connection with the covering and ornamenting of walls, houses, churches etc. The common European ivy is *Hedera helix*, which belongs to the aralia family. It is evergreen, with entire or three-to-five lobed leaves and usually black berries. It is an exceedingly variable species, and more than 60 species have been cultivated in European gardens. The American ivy or woodbine is a species of *Ampelopsis*, a genus which belongs to the grape family. It is a much more rapid-growing vine than the English ivy, and its leaves color bright scarlet in autumn. About 20 species are known in North America and



IVY, SHOWING THE AERIAL ROOTLETS

Asia, the common one in the United States being *A. quinquefolia*, often called the Virginia creeper. Japan ivy or Boston ivy is also a species of *Ampelopsis* (*A. tricuspidata*), being especially useful, since it covers walls very densely and its glossy leaves stand dust and smoke well. This probably is the favorite among the hardy vines in cities. The name of poison ivy is applied to various poisonous species of *Rhus* (*R. toxicodendron*, also known as poison oak, being the chief one), a genus which belongs to the cashew family.

Ixcaquixtla (*ēs-ka-kēs'-tla*), an old town in Puebla, Mexico, with a population of 5,000. It is noted for a severe battle on Jan. 1, 1817, between the Spanish troops under La Madrid and Mexican rebels under General Mier. It is occupied by the Chuchan Indians and the remnants of a race of southern Mexico, who were conquered by the Aztecs and Mixtecas. Near the town are numerous mounds of earth or stone, now used by the Indians as altars for their offerings to Moctezuma.

Ixion (*iks-ī'-on*), according to Greek story, a Thessalian prince, king of the Lapithæ. When the father of his bride demanded the usual bridal gifts, Ixion invited him to a banquet and treacherously had him thrown into a fiery pit. No one would have anything to do with the murderer or purify him from his guilt; so Zeus took him up into heaven to be purified. But when Ixion dared to make love to the goddess Hera, he was bound hand and foot to a fiery wheel, which rolled forever in the sky.

Ixtapalapa (*ēs'-tä-pä-lä'pä*), a town of Mexico, ten miles southeast of the capital. It has a population of about 3,000. When Mexico was conquered, it was a large and important city, noted for the beautiful gardens of the Aztec kings, and was the residence of a brother of the ill-fated Aztec emperor, Moctezuma.

Ixtlilxochitl (*ēsht'lïl-shō'chēt'l*), **Fernando de Alba,** a Mexican historian; born in Texcuco about 1568; a lineal descendant of the ancient emperors of Texcuco, who devoted himself to the collection and translation of hieroglyphic records concerning his ancestors. Comparatively little was known of his writings until their importance was announced by Clavigero and Humboldt. His history was divided into thirteen books, and covered the period from the earliest times to the destruction of the Mexican empire. Prescott, who made use of these works in his *History of Mexico*, calls the author the Livy of Anahuac. He died at Texcuco in 1648.

Izalco (*ēs-äl'-kō*), **Mount,** a remarkable volcano, 36 miles northwest of the city of San Salvador. It is near a group of extinct volcanoes, 6,000 feet high. Its first eruption occurred in 1770 during an earthquake. The eruptions are almost incessant and of unusual violence, and are visible far out at sea. Sailors call it the lighthouse of San Salvador. Izalco, with the exception of Jorullo in Mexico, is the only known volcano that has arisen from the level of the plain in the memory of man. In 1798, after a series of earthquakes, dust and pebbles were seen rising from an opening in the plain. Soon after, lava was thrown up, and this, together with huge stones, slowly piled up around the opening till the vast cone, as it now stands, was formed.

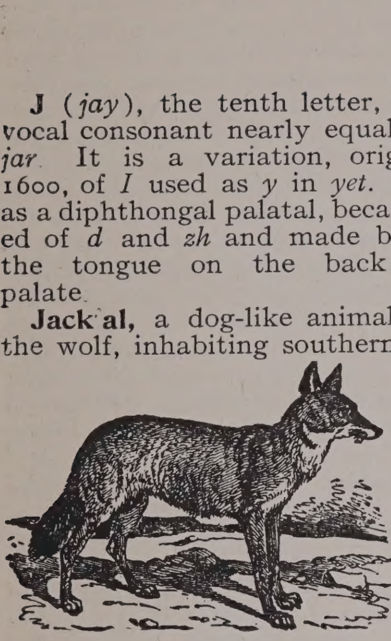
Iz'ard, Ralph, an American statesman, was born near Charleston, S. C., in 1742, and educated at Cambridge, England. He was a man of large wealth, and pledged his estate to aid in carrying on the war for independence against England. In 1776 congress appointed him a commissioner at the court of the grand duke of Tuscany, and in 1780 he returned to the United States. It is said that no one had the confidence of Washington to a higher degree than Izard and that he was largely instrumental in securing the appointment of General Greene to the southern army. In 1782–83 he was a delegate to the Continental congress, and from 1789 to 1795 was a United States senator from South Carolina. His *Correspondence from 1774 to 1784* was published in 1844. He died at South Bay, near Charleston, May 30, 1804.

Iztaccihuatl (*ēs-täk-sē'hwät'l*), a Mexican volcano, 16,705 feet in height, is situated not far from the volcano of Popocatepetl, near the city of Puebla. Its summit is almost always covered with snow, and its name means white woman from its fancied resemblance to a woman in a white dress. There are no eruptions now from Iztaccihuatl.

J

J (*jay*), the tenth letter, is a compound vocal consonant nearly equal to *dzh*, as in *jar*. It is a variation, originating about 1600, of *I* used as *y* in *yet*. It is classified as a diphthongal palatal, because compounded of *d* and *zh* and made by the point of the tongue on the back of the hard palate.

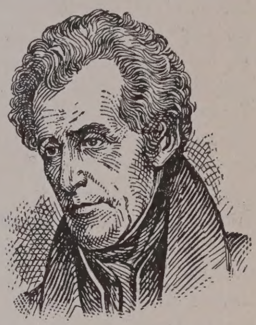
Jack'al, a dog-like animal, smaller than the wolf, inhabiting southern Europe, Asia and northern Africa. It has a pointed muzzle, like a fox, and a bushy tail about one third the length of the body. The common jackal of southern Asia is the best known. It is grayish yellow in color, darker above and lighter below. During the day jackals remain concealed in burrows, caves and sheltered places, but at night they hunt, frequently in packs. They utter a piercing unearthly cry, and the howling of a pack at night is familiar in oriental villages. They feed on smaller mammals, poultry and especially carrion, quarrelling over the latter with the vultures. They shadow wounded animals and haunt battlefields and burying-grounds. When running in packs, they often attack sheep and antelopes. They are easily tamed, and probably represent one of the breeds from which the domestic dog is descended. They are harmless if left unmolested, but when cornered fight desperately.



JACKAL

Jack'daw, a common Old World bird of the crow family, found in Europe, Asia and North Africa. It is smaller than its closest relations, the crow, raven and rook, being about 14 inches in length. Its color is black, with gray at the sides of the neck, and it has a straighter bill than other crows. It builds nests in holes, cavities in rocks, church-towers, chimneys and uninhabited buildings. It feeds chiefly on insects. The jackdaw is easily tamed, and besides making an interesting pet, can be taught to imitate the human voice.

Jack'son, Andrew. One of the most original and forceful characters that ever appeared in American public life is this seventh president of the United States. He died in 1845, the issues of his day have long since become ancient history; but Jackson's is still a name for the Democratic party to conjure with. He expressed a definite, vital idea stamped with a picturesque personality. He was worshipped and vilified but could never be ignored. Tradition still votes for him, for his party's candidates for office must measure up to certain standards laid down by Jefferson and Jackson.



ANDREW JACKSON

Jackson was the product of a peculiar period of transition in American life and ideals. Born in the Waxhaw Settlement, South Carolina, in 1767, two years before Daniel Boone penetrated Kentucky, he was a generation later than Boone, a generation earlier than Lincoln. As a boy of 13 he saw service in the last years of the Revolution. As a youth of 20 who had, although early orphaned and in spite of poverty and impatience of restraint, made of himself a lawyer, he was in Tennessee as prosecuting attorney. He prosecuted lawbreakers, carved a plantation out of the wilderness, fought Indians and had duels, raced horses, organized the machinery of civic life and loved his wife — all with equal facility and ardor. In 1813 he organized a volunteer force of 3,000 men and marched against the Creek Indians. Until the battle of Horseshoe Bend, March 27, 1814, which broke the power of the red man in the south, Jackson had had only local fame. Four days later, with the sobriquet of Old Hickory, won by his endurance of hardships in the campaign, he was appointed a major-general in the regular army, with orders to defeat the British forces in the south. Although Pensacola, Florida, was in Spanish territory, the British were using it as a base of operations. Jackson stormed and captured the seaport. He then, with 4,000 troops and 12 guns behind breastworks, defended New Orleans against 12,000 British veterans. The victory was so great that its anniversary, January 8, is still celebrated as Jackson Day. He added to his military fame by defeating the Seminole Indians of Florida in 1819. On the purchase of that territory from Spain he became its first governor.

The typical hero on horseback, he rode with a dash into the arena of national politics as United States senator from Tennessee. The next year he was an unsuccessful candidate for president. Thomas Jefferson, the founder of the Democratic party, then within two years of his death, recognized the fiery westerner as the future leader. Jackson's election to the presidency in 1828 was of immense significance. It marked the apotheosis of the new west — vigorous straightforward, forceful, crude. His bold application of the spoils system alarmed the country as well it might, for it was productive of corruption in the public service for the next half century. But this is not all he stood for. He revived the tradition of Jeffersonian simplicity, but he repudiated the doctrine of state sovereignty. His personal force must have been great, indeed, for him to ride thus over a principle of his party that had become an article in the political creed of the south, his own section. South Carolina during his administration refused to obey a tariff law passed by Congress, but it submitted when Jackson issued a proclamation to the effect that all Federal laws would be enforced and could not be nullified by the states. Yet when, at a banquet, he proposed the toast: "The Federal Union; it must be preserved," his vice-president, John C. Calhoun, proposed another: "Liberty dearer than Union." The eight years of his administration were marked by relentless war on the United States Bank. Tyrannical to the last degree, Jackson broke up his cabinet to force the social recognition of a good woman of lowly birth.

His power survived all these shocks, and he retired from the presidency with increased popularity to become his party's dictator. He secured the succession to his favorite, Van Buren, and crushed the political aspirations of Calhoun. He had made of the Democratic party an organization that was to rule the country up to the Civil War.

A loyal friend, he believed Aaron Burr to be maligned and defended him successfully against the charge of treason; a bitter foe, he shot the man who slandered Mrs. Jackson, and he carried a loaded pistol for 30 years to defend her good name. On his plantation he was Sir Harry Hotspur turned patriarch. His great colonial mansion, The Hermitage, was always filled with guests. He adopted his wife's son by a former marriage, and cared for her numerous young relatives. He wore crape for his wife for 17 years. He died at The Hermitage, near Nashville, June 8, 1845, and was buried in the garden. The estate is owned by Tennessee, and the mansion is preserved as a museum of Jackson relics. See *Life* by James Parton and by Major Eaton.

Jack'son, a city and the county-seat of Jackson County, central southern Michigan, lies on both sides of Grand River, which is here crossed by 17 bridges (five of iron) 76 miles west of Detroit and 37 south of Lansing, at the intersection of several railroads. It has a number of flour, paper and planing mills and foundries and machine shops; the Michigan Central locomotive-works, and manufactures of automobiles, furniture, carriages, wagons, boilers and machinery, farming implements, corsets, underwear, etc. There is a flourishing general trade. Within the city-limits and close by are several mines of bituminous coal. The city has handsome churches and public school buildings, Y. M. C. A. building, a masonic temple and a Carnegie Library. Jackson was settled in 1830 and became a city in 1857. Population, 60,000

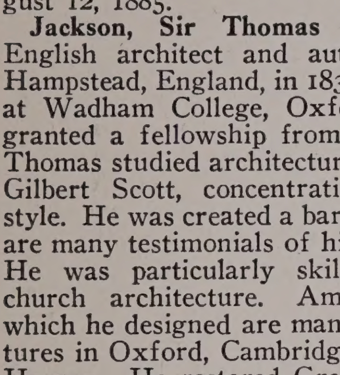
Jackson, capital of Mississippi and county-seat of Hinds County, stands on a plain on the right bank of Pearl River, which becomes navigable here. The city lies 45 miles east of Vicksburg and 180 miles north of New Orleans by rail. It is situated in a rich cotton-growing region, and, as the railway and geographical center of the state, it has an important and growing trade. Being the capital, it is the seat of several important state institutions and asylums, Millsap's College (M. E.) and the Bell Haven College for young women. The city is noted for its beautiful residence streets, with houses standing in the midst of gardens. The great industry of the surrounding region is cotton-growing, but the advantages of this section for stock-raising are being rapidly developed. Among its industrial establishments are cottonseed-oil mills, a cotton-compress, foundries and fertilizers, sash, door and blind factories. Population, 25,000.

Jackson, county-seat of Madison County, Tennessee, on the south fork of Forked Deer River, 107 miles by rail southeast of Cairo, Ill. It is the seat of Southwestern Baptist University, of Memphis Conference Institute (M. E.), St. Mary's Academy (R. C.) and Lane College for colored students. It has excellent public schools, a high school, a public library etc. Jackson is of importance as a cotton-market; and has planing and other mills and railway shops. Its factories produce engines, boilers, iron and steel bridge material and church and school furniture. Population 21,000

Jackson, Helen Hunt (maiden name, Helen Maria Fiske), was born at Amherst, Mass., Oct. 18, 1831. She studied at Ipswich Female Seminary, and in 1852 married Major E. B. Hunt (d. 1863) of the United States engineers. She afterward married

William S. Jackson, and lived most of the latter part of her life at Colorado Springs, Colorado. She began to write verses about 1870 over the signature "H. H.," which soon became familiar to magazine readers. She had always been interested in the welfare of the Indians, and her book, *A Century of Dishonor,* made her their champion. In 1883 Mrs. Jackson was made a commissioner by the government to look into the condition of the mission Indians of California. Her last book, *Ramona,* which deals with Indian life, leaped at once into great popularity. She died at San Francisco on August 12, 1885.

Jackson, Sir Thomas Graham, a noted English architect and author, was born in Hampstead, England, in 1835. He was educated at Wadham College, Oxford, where he was granted a fellowship from 1864 to 1880. Sir Thomas studied architecture under Sir George Gilbert Scott, concentrating on the Gothic style. He was created a baronet in 1913. There are many testimonials of his work in England. He was particularly skilful in school and church architecture. Among the buildings which he designed are many of the new structures in Oxford, Cambridge, Eton, Rugby and Harrow. He restored Great Malvern Priory, Bath Abbey, and Winchester Cathedral. He died in 1924. Among his published works are: *Byzantine and Romanesque Architecture* (1913); *Gothic Architecture in France, England* and *Italy* (1915); *Renaissance of Roman Architecture* (1921-22), and *Memories of Travel* (1923).



STONEWALL JACKSON

Jackson, Thomas Jonathan, known as "Stonewall". Jackson was born at Clarksburg, West Virginia, on January 21, 1824. The father died when Thomas was but three years old, and the mother was left with three children and no means of support. To provide for herself she taught school and worked at sewing. The children were given to their uncles and aunts. Thomas went to live with Cummins Jackson, an uncle, who took a father's place, and in 1842 secured his appointment in the national military academy at West Point. His appearance when he entered has been described as follows: "A slender lad, who walked rapidly, with his head bent forward; a grave, thoughtful face, which gave him a dull look; but when anything interested him or excited him, his form became erect, his eyes flashed like steel, and his smile—sweet as a girl's—would brighten his whole face." After graduation he was sent to aid General Scott in the Mexican War. He acquitted himself so well that he returned with the rank of major. When the Civil War broke out, Jackson was settled at Lexington, Virginia. He sided with his state, and joined the Confederate army under Robert E. Lee. On July 3, 1861, he was made brigadier-general. In the battle of Bull Run, Jackson was supporting General Bee, with his forces ranged on a hill near by. Bee, to encourage his soldiers, pointed to the ridge and cried out: "There is Jackson standing like a stone-wall: rally behind the Virginians." A moment later Bee was killed. Soon after, Jackson's force was engaged with the enemy. His order to the men was: "Reserve your fire till they come within fifty yards; then fire and give them the bayonet; and when you charge, yell like the furies." This is said to have been the origin of the afterward well-known "rebel yell." He was made major-general in the spring of 1862, and in the campaign of the Shenandoah he outgeneraled McDowell, Banks and Fremont and drove them back upon the lower Shenandoah. Then, hastening by forced marches to Richmond, he turned the tide at Gaines' Mill in June and won the battle of Cedar Run in August. His troops bore the brunt of the fighting in the second battle of Manassas. In September he captured Harper's Ferry, with 13,000 prisoners and seventy cannon, and after a trying night's march joined Lee next day and probably saved him from disaster at Antietam. As lieutenant-general he commanded the right wing at Fredericksburg, and drove Hooker back at Chancellorsville, May 1, 1863. All next day Jackson was on the march, moving around the flank of the Federal army; at nightfall he fell upon its right and drove it back. Upon his return from a reconnoissance, his party was fired on by some of his own command, who mistook him for a Federal general, and Jackson received three wounds, from which he died on May 10, 1863. Jackson was the idol of his soldiers, who not only admired his bravery but believed in his generalship. "His loss," writes Greeley, "was the greatest yet sustained by either party in the fall of a single man." Jackson was a muscular man, fully six feet high, with a clear, pale complexion, bluish-gray eyes, an aquiline nose, prominent chin, strong jaws, large head and high forehead. He was a man of deep moral earnestness and of great natural bravery, vigor and promptness of action.

Jackson, a flourishing manufacturing city of Michigan and the seat of the county of the same name is situated on the Grand River, of which it occupies both banks, seventy-six miles west of Detroit, and thirty-seven miles south of Lansing. Jackson has well-paved streets, and several handsome public buildings. There are excellent schools and churches. The city boasts a park system which extends over an area of 540 acres. There is a municipal water-works system, which supplies the inhabitants with pure artesian water. The city is served by several important railways, and the Michigan Central car and machine shops are located there. A municipal airport is located just outside the city limits.

Jackson is the center of a large trade from the surrounding agricultural community, as well as a distributing point for farm machinery. Several bituminous coal mines are located within the city limits and just outside. The chief manufactures include agricultural implements, furniture, boilers, machinery, corsets, soap, sewer-pipe and bricks. There are flour mills, paper mills, planing mills and foundries. Boots and shoes are manufactured at the State prison. In 1930 the population of Jackson was 55,187.

Jackson, a city and the capital of Mississippi, is situated in Hinds County on the Pearl River, forty-five miles east of Vicksburg, and near the center of the State. The city is in the center of an agricultural region, and has excellent transportation facilities both by rail and air, making it an important trade center. Cotton is the chief export. The principal manufactures include cottonseed oil, fertilizers, woodwork, caskets, bricks, farm machinery, brooms, and foundry products.

Jackson possesses one of the largest natural gas fields in the world. In 1931 there were forty-seven producing wells, from which there was a daily flow of 2,000,000,000 cubic feet of gas. More wells are being drilled each year.

Two colleges are located in Jackson, the Bellhaven College for women, and Millcaps College, which is a Methodist institution. Jackson has an interesting Civil War history. In 1863 it was captured by General Grant, and in 1864 was almost destroyed by General Sherman. In 1930 the population was 48,282.

Jackson, a city and the seat of Madison County, Tennessee, is situated in the central part of western Tennessee, eighty-six miles northeast of Memphis. Jackson is built on the South Fork of the Forked Deer River. It is served by five important railroads and two national highways.

Jackson is an important cotton market for the surrounding territory. Cotton and cottonseed products are the principal items of trade. Its principal manufactures include hardwood products, lumber, iron and steel, furniture, church and bank fixtures, machinery supplies, and creosote. Printing, and meat packing are important industries of the city.

There are excellent public and parochial schools in the city. In 1930 the population was 22,172.

Jacksonville (*jăk'sŭn-vĭl*), an important city and the seat of Duval County, Florida, is situated on the St. John's River, about 165 miles east of Tallahassee, the State capital. In a direct line it lies within fifteen miles west of the Atlantic Ocean, where are the coast resorts of Mayport and Pablo Beach. Jacksonville is one of the chief southern railroad centers, five trunk lines converging there. The city is known as the "Gateway to Florida."

Because of the beautiful wooded country, rivers, lakes, everglades, and hunting and fishing grounds, Jacksonville is one of the leading winter resorts in the United States. Its invigorating and warm climate makes the city fascinating to the winter visitors and those seeking a health restoring clime. There are many beautiful parks and wide and shaded drives in the city, and excellent hotel accommodations. The electric plant and water works are municipally owned and operated. Port Jacksonville provides rare advantages to fine yachts and pleasure boats. Beautiful golf links spread over the floor of the Florida Country Club, and sandy ocean beaches and those along the St. John's River offer splendid bathing facilities, all of which tend to make Jacksonville a popular resort during both the winter and summer seasons. There are several spacious parks throughout the city. A Confederate Monument occupies a conspicuous site in Heming Park.

There are approximately 400 industrial establishments in Jacksonville including machine shops; shipyards, foundries, cigar and ice factories. Jacksonville enjoys a profitable trade with other Atlantic ports in naval stores (rosin and turpentine), lumber, cotton, moss, fuller's earth, plate glass, oranges, pineapples, and early vegetables. Rosin is the most valuable of these exports. The only ostrich farm in the United States east of the Mississippi is situated in a suburb of Jacksonville. Both manufactured and agricultural products are shipped from Jacksonville, the commercial center of the state.

After the epidemic of yellow fever in 1888 an excellent sewerage system was installed. Swampy tracts were drained and filled, and the water supply drawn from fifteen artesian wells, averaging 1,050 feet in depth.

Jacksonville's importance as a port was greatly hindered by dangerous shoals until 1896, when a channel nineteen feet deep was built from Jacksonville to the ocean. In 1901 this channel by national appropriation was deepened to twenty-four feet, and since then it has been deepened to thirty feet giving Jacksonville excellent dry-dock facilities.

The city has well developed transportation facilities. The Municipal Flying Field, Paxon Flying Field and an airport at Camp Jackson are excellently equipped to receive airplanes, hydroplanes and amphibian planes.

Among the principal institutions of Jacksonville are St. Mary's Orphanage, St. Luke's Hospital, and the Confederate Veteran's Home. Jacksonville was founded in 1816 and was named in honor of Andrew Jackson. On May 3, 1901, a goodly portion of the city was destroyed by fire, with a loss estimated at more than $10,000,000. At that time Jacksonville had a population of 28,429. To-day it is acclaimed the metropolis of the State. In 1930 the population was 129,549.

Jacksonville, a city and the seat of Morgan County, Illinois, stands in a fertile prairie region, at the junction of several railroads, thirty-four miles southwest of Springfield. It is noted for its schools. Here are Illinois College, Illinois Women's College, several conservatories of music and other educational institutions. Here are state asylums for the blind, the deaf and dumb, the insane and, also, the idiotic and feeble-minded. The public-school system is excellent, and the city is greatly beautified by trees. There are manufactories of woolens, paper, machinery, boilers, lumber, confectionery, furniture etc. Population 15,326.

Ja′cob (Heb. *Supplanter*), one of the three chief patriarchs. His history and character are described in *Genesis*. His capacity for spiritual growth and true manhood is suggested by his name being changed to Israel or Prince-with-God. His sons were the ancestors of the twelve Hebrew tribes.

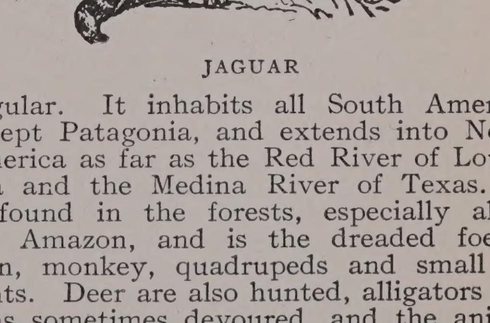
Jacobins (*jăk′-ō-bĭnz*), a political club which had great influence during the French Revolution. The club was at first called the Club Breton, and was formed at Versailles in 1789. The members were all in sympathy with the Revolution. The club met at the former Jacobin convent in Paris. Its power became greater than the national assembly, and no less than 1,200 branch clubs were formed. Almost all the great events which followed were determined by the voice and power of this club. It reached the height of its power in 1792. The popular cry for the death of the king, the uprising of the lower classes against the middle classes and the Reign of Terror throughout France were the work of the Jacobins. But upon the arrest, trial and execution of Robespierre in 1794 the Jacobin club began, to lose its influence. On Nov. 9, 1794 the club was suppressed. The term Jacobins is often employed to indicate persons of extreme revolutionary sentiments.

Jacquard (*zhä′kär′*), **Joseph Marie,** was an ingenious Frenchman, a native of Lyons, born on July 7, 1752. Early in life he was called upon to carry on the weaving business of his father, and set himself to work to improve the machinery then used in weaving. By his invention he made it possible for an ordinary workman to produce the most beautiful patterns with little labor. The reception of this great invention, like all others, was not encouraging. Napoleon rewarded the weaver by a small pension, but the great body of weavers so opposed the new machine, that on one occasion they tried to take the inventor's life and broke his machine in pieces. But the invention was too valuable to be kept long in the background, and in a few years weaving was almost revolutionized by its use, especially in the finer silk fabrics. On the spot where his machine was publicly destroyed now stands a fine statue of Jacquard. He died near Lyons on Aug. 7, 1834.

Jade, a hard, green stone, highly prized in oriental countries for making ornaments. It also is known as nephrite, being so named by the Greeks because often worn in diseases of the kidneys as an imagined remedy. It is a compact, translucent stone, usually but not invariably green or greenish in color, variable in composition. It is a variety of hornblende, and is often called axestone because of its frequent use among savages for making weapons and implements.

Jaf′fa or **Jop′pa,** a town situated on the seacoast of Syria, about 33 miles northwest of Jerusalem. Jaffa is a place of great beauty as well as of great age. Here, according to fable, Andromeda was chained to a rock and left to be devoured by a sea-monster. It was the port of Jerusalem in the time of David and Solomon. From here Jonah sailed for Tarshish. It was at Jaffa that Peter saw the vision that taught him that Christ came to save Jew and Gentile alike. It reached its greatest importance during the crusades, when it became the principal landing-place of the warriors of Christendom. In 1799 it was bombarded by Bonaparte, and upon the surrender of the town a cruel massacre of Turkish prisoners took place. The exports are soap, leather, oranges, wheat and sesame. The open harbor, the old walls, the yellow sandbanks and the large orange gardens are the chief features. There is a railway from Jaffa to Jerusalem, a distance of 54 miles. Population 45,000.

Jag′uar, the largest of American animals belonging to the cat family. An average specimen measures (with the tail) from six to seven feet. It is the tiger of the New World and the third most powerful of the entire cat tribe. The head is noticeably large, the legs massive. There is much variation in its color, but in general it is yellowish brown with spots like the leopard. The spots, however, are larger and more angular. It inhabits all South America, except Patagonia, and extends into North America as far as the Red River of Louisiana and the Medina River of Texas. It is found in the forests, especially along the Amazon, and is the dreaded foe of man, monkey, quadrupeds and small rodents. Deer are also hunted, alligators and boas sometimes devoured, and the animal is often expert in catching fish. It hunts both by pursuit and by leaping from ambush. There is some reason for believing



JAGUAR

that there are three species of jaguars — a large and a small spotted form and a large, black variety which attacks the tapir.

Jaipur (*jī-pŏŏr*) or Jeypur, one of the Rajputana states, feudatory to the British crown; and also a walled city 850 miles northwest of Calcutta, India, and the capital of the native state of the same name. It is a handsome, well-built city, and was founded in 1728, In it are the maharajah's palace and college, a school of art, an observatory, a mint and many mosques and temples. The beautiful Ram Newas gardens, covering 70 acres, are a fine park. Its business is chiefly banking. Population 160,000. The state has an area, including feudatories, of 15,579 square miles, with a population of about 3,000,000.

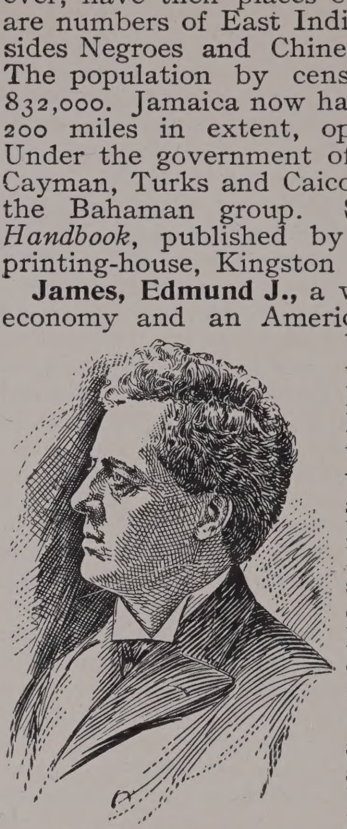
Jamaica (*jä-mā'-kä*), first called Xaymaca, "land of springs," one of the largest of the West India Islands and the most important of the Antilles belonging to Great Britain. It lies some 90 miles south of Cuba, and its area is about 4,200 square miles. Its greatest length is 144 miles, and its greatest width is 50 miles.

Surface and Cities. It is crossed from east to west by a heavily timbered ridge called the Blue Mountains, which rise 7,400 feet. Excellent harbors are everywhere found. The best is in the southeast, in the deep basin which washes the most spacious and fertile of the plains between the hill-country and the coast. Around this inlet and within a few miles of each other are the largest towns: Kingston (population 50,000) and Spanish Town, the old capital (population 5,500). Here also is Port Royal, one of the chief cities of the West Indies before the great earthquake of 1692.

Climate and Products. The climate varies from the torrid belt of the coast to the temperate region of the Blue Mountains, which have become favorably known as a resort for invalids. Vegetation is luxuriant. The primeval woods are fast disappearing, but there still are many valuable trees, as balata, mahogany, logwood, ebony, cocoanut and other palms. The exports are chiefly dyewoods, fruits (oranges, lemons, bananas and pineapples), sugar and coffee, allspice and cocoa. Jamaica has 817,211 acres under cultivation — 246,373 under tillage and 570,838 under pasture.

Education and Defence. In addition to government training-colleges for both sexes and to high-schools, Jamaica supports nearly 700 government elementary schools and industrial institutions. Port Royal is strongly fortified, and, besides the garrison of regulars (English), there are a local artillery militia and a rifle corps.

Jamaica was discovered by Columbus in 1494, and was settled by the Spaniards in 1509. It was conquered by an expedition sent out by Oliver Cromwell in 1655, and was ceded to the English in 1670. In 1661 a representative council was established, but this was abolished in 1866, and in 1884 a partially elective legislative council was instituted. There is no established church; all the chief religious denominations, however, have their places of worship. There are numbers of East India immigrants, besides Negroes and Chinese on the island. The population by census of 1911 was 832,000. Jamaica now has a railway nearly 200 miles in extent, open and running. Under the government of Jamaica are the Cayman, Turks and Caicos Islands, part of the Bahaman group. See the *Jamaica Handbook*, published by the government printing-house, Kingston



EDMUND J. JAMES

James, Edmund J., a writer on political economy and an American educator was born at Jacksonville Ill., in 1855. He attended Northwestern University; and afterwards studied at Harvard, Halle, Leipzig and Berlin. He has in succession been principal of Evanston (Ill.) High School and of the State High School at Normal (Ill.), professor of administration and finance in the University of Pennsylvania, professor of administration in Chicago University, and (1902) president of Northwestern University (Ill.). He now is president of the University of Illinois at Urbana. He has written *An Outline of a Proposed School of Political and Social Science, Chairs of Pedagogics in our Universities, The Relation of the Modern Municipality to the Gas-Supply, Our Legal Tender Decisions, The Education of Business Men in Europe, The Growth of Great Cities*, etc.

James the Great, held to be the oldest of the brothers of Jesus, was stoned to death by command of the high priest Ananias in 62 A. D. He is the James mentioned in *Acts* xii., xv., xxi. and *Gal.* i. 19, who was the head of the Christians at Jerusalem and, according to one authority, was called the Just. He is held to be the author of the epistle which bears his name. His epistle is the first of what are known as the *catholic* epistles, that is, those addressed to no one person or church but "to the twelve tribes scattered abroad." It was written not later than 50 A. D., certainly before the destruction of Jerusalem in 70 A. D.

James I of England and VI of Scotland, the only son of Mary, Queen of Scots, and

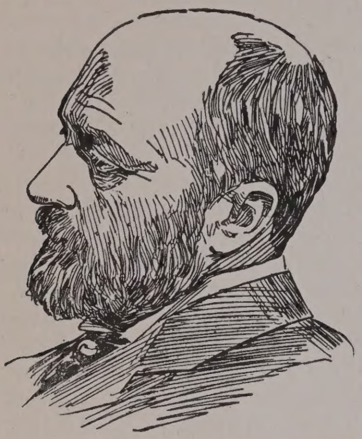
Henry, Lord Darnley, was born in Edinburgh, June 19, 1566. When his mother was forced to resign the crown, James was proclaimed king of Scotland, July 29, 1567. The training of his childhood was under the care of the earl of Mar. His tutor was the famous scholar, George Buchanan. In 1578 the earl of Morton, then regent, was driven from power, and James assumed full control. The new government was unpopular, and Morton was once more made regent. He was at length condemned and executed as one of the murderers of Lord Darnley. In the winter of 1589 James went to Denmark, where he married Princess Anne, daughter of King Frederick II. By the death of Elizabeth in 1603 James succeeded to the throne of England. He soon became unpopular with his new subjects. The anger of the Roman Catholics toward him, because of his severities, led to the famous Gunpowder Plot (which see). He really governed through his favorites, Kerr and Buckingham, both of them unpopular; and England's prestige as a power, which had been gained under Elizabeth, soon disappeared. He has been described as two men in one — "a witty, well-read scholar, who wrote, disputed and harangued, and a nervous, driveling idiot who acted." He was called by Henry IV of France "the wisest fool in Christendom." James died on March 27, 1625. See Macaulay's, S. R. Gardiner's and Ranke's histories; also Goodman's *Court of James I* and Scott's *The Fortunes of Nigel.*

James II of England and VII of Scotland, second son of Charles I and Henrietta Maria, was born on Oct. 15, 1633. In 1643 he was made duke of York. During the Civil War he escaped into France. He served in the French and Spanish armies. In 1661 he married Anne, daughter of Lord-chancellor Hyde. When Charles II died, James was made king, Feb. 6, 1685. He was most unpopular, because he was a Roman Catholic and utterly failed to understand the temper of the English people. He levied, without warrant from parliament, from the customs-duties. He became, as his brother Charles had been, a mere puppet in the hands of the French king, Louis XIV. The Covenanters of Scotland were persecuted even worse than they had been when Charles had handed Scotland over to the tender mercies of James. After the unsuccessful rebellion of the king's nephew, Monmouth, came the "Bloody Assize," the court held by the wicked Jeffreys, in which 320 persons were hanged. Such acts roused the anger of the nation to the highest pitch. An invitation was sent to William, Prince of Orange, signed by seven of the leading English statesmen, to come over to England and take the crown and throne. At the head of a powerful army William landed at Torbay on the English Channel, on Nov. 5, 1688, and began his march toward London. He was everywhere hailed as a deliverer, while James was deserted, not only by his ministers and troops, but even by his daughter, Princess Anne. The king had feared danger, and had sent his wife and infant son to France, where he soon joined them at St. Germain. He was kindly received by Louis XIV, who settled a revenue upon him. Next year he made a hopeless attempt to regain his throne, with an army furnished by France. He invaded Ireland, but was totally defeated at the battle of the Boyne (1690). He died at St. Germain, Sept. 6, 1701. See Macaulay's, Ranke's and Lingard's histories and Burnet's *History of his Own Time.*

James III of Scotland, the son of James II and Mary of Guelderland (Guelders), was born in 1452. On the death of his father the government was conducted by his mother, aided by the wisdom of Bishop Kennedy. Upon her death in 1465 the young king came to power. He all his life, however, was under the influence of scheming favorites. Among these was a man named Cochran, who had been a mason. Through his influence the duke of Albany, the king's brother, was forced to fly from the kingdom, having been charged with witchcraft; while the earl of Mar, another brother, died in prison. The rule of Cochran and other low-born favorites led to a rebellion among the nobility. The result was that they were hanged. The king himself was shut up in his castle at Edinburgh. James's love for literary pursuits drew upon him the contempt of the warlike and ignorant nobles. An attempt was made to take the throne from him. James led out the royal army to defeat the rebels, near Stirling, but was himself overcome and obliged to fly. He was thrown from his horse and murdered, June 11, 1488.

James IV of Scotland, the son of James III and Margaret of Denmark, was born on March 17, 1472. The rule of the new king, who came to the throne after the death of his father, gave promise of being both vigorous and popular, while his personal beauty and open frankness won the hearts of his people. He exhibited energy and sense in the management of public affairs, in vindicating the law and punishing crime, in encouraging ship-building and in developing agriculture and manufactures. In 1503 the king married Margaret, oldest daughter of Henry VII of England, an alliance which led to the union of the two crowns just 100 years later. Henry VIII came to the English throne in 1509, disputes followed, and James invaded England. He was met by the earl of Surrey, and in the battle of Flodden, Sept. 9, 1513, the king and many of his nobles were killed. He was 46 years old, and had reigned 26 years. James was only in his 16th year when he was persuaded to join the barons in their rebellion against his father. The remorse which he felt when he learned that his father had been cruelly murdered is shown by his wearing an iron chain about his waist and doing many other things by way of penance for his guilt. He possessed great ability, but was headstrong, obstinate and overfond of pleasure. See Gregory Smith's *Days of James IV*.

James, Henry, American novelist, essayist and one of the most cultured and polished of writers, was born at New York, April 15, 1843. He was the son of Henry James, religious author and lecturer, and like his father has become noted as an author. He was educated at New York, Geneva, Paris and Boulogne, and in 1862 entered Harvard Law School. He soon began to write magazine stories. His first novel was *Roderick Hudson* (1875). He was known as eminent critic as well as novelist, and has given us such clever studies as *French Poets and Novelists*, *Partial Portraits* and a monograph on *Hawthorne*. Perhaps his best story is *Daisy Miller*. Others include *The American*, *The Europeans*, *The Bostonians*. He died Feb. 28, 1916.



HENRY JAMES, JR.

James River, an important river formed by two streams in the west of Virginia. It runs its entire course in the state, passing Lynchburg and Richmond and widening into an estuary 60 miles before reaching the Atlantic at the southern end of Chesapeake Bay. Its length is 450 miles and for some distance it is navigable for large steamers. Its chief branches are the Appomattox on the right and the Chickahominy on the left. These streams were made famous by the battles which took place there in 1862.

James Stuart, called The Old Pretender, the son of James II and Mary of Modena, was born on June 10, 1688. His father had been driven from the throne by William of Orange, and died at St. Germain, France. Soon after his death a herald made his appearance before the palace-gate, and, with the sound of trumpets, proclaimed in Latin, French and English: "James III, king of England and Scotland." The boy was received at the French court with all the honors which his father had received before him. In London a few nobles remained faithful to the memory of his father. These made haste to proclaim James III. But the opposition was too strong, and in all parts of the kingdom the people passed resolutions of fealty to William of Orange and of defiance to the king of France and his protégé, the young prince. His life was one of constant expectation and disappointment. At times the throne seemed just within reach, but as often slipped from his grasp. In 1719 he married Marie, granddaughter of John Sobieski, king of Poland, by whom he had a son known in history as Charles Edward, The Young Pretender. He died at Rome, Jan. 12, 1766. See J. H. Jesse: *Memoirs of the Pretenders and Their Adherents*.

James, William. He was born in New York City in 1842, the son of Henry James, the theologian and follower of Swedenborg, and the brother of Henry James, the well-known novelist. After an education in private schools and by private tutors in America and Europe, he attended Lawrence Scientific School of Harvard, and received his M. D. from that university in 1870. Since then he has received the LL.D. from Princeton University. In 1872 he was appointed instructor of anatomy and physiology in Harvard University; but soon changed to philosophy and then to psychology. It is in the last field that he has made a permanent name. Recently he has turned his attention chiefly to philosophy, and is the exponent of what is known as pragmatism, the theory that every doctrine must be interpreted and judged in terms of the effect its adoption has upon the action of individuals. In his psychological work his most notable contribution is the so-called James-Lang theory of the emotions, which maintains that emotions must be regarded as the result of those instinctive bodily movements which are commonly regarded as the expression and result of the emotions. He is distinguished among scientific writers for his bright and pleasant style and for the many forceful, picturesque expressions he has coined. It has been said that Henry writes fiction as if it were psychology, and William writes psychology as if it were fiction. His works are *The Principles of Psychology*, an epoch-making work; *The Will to Believe*; *Human Immortality; Talks to Teachers on Psychology; Varieties of Religious Experience*, a work that opens a new era of thinking in its line; and *Pragmatism*, an account of his philosophical doctrine. Died Aug. 26, 1910.

Jame'son, Leander Starr, best known as the leader of a rash and ill-considered raid into the South African Republic (Transvaal) in 1895, was born at Edinburgh in 1853, and educated as a doctor of medicine (London, 1877). From 1891 to 1895 he was administrator of Rhodesia; but on invading Transvaal with 600 men upon his own responsibility, during the *Uitlander* agitations, he was captured by the Boers; and sentenced by the British government to 10 months' imprisonment. He afterwards served in the Boer War with the British forces, became a member of the Cape Colony Parliament and director of the De Beers Company and the British South African Company; and in 1904 he became premier of Cape Colony. In 1908 he resigned, the Dutch having outvoted his party.

James'town Exposition, The, which was held in Virginia in 1907 to celebrate the 300th anniversary of the settlement, recalled in the first place something of the early history of the south. The exposition stood in wide grounds which covered some 500 acres, on the shore opposite Old Point Comfort, where the pioneers from the *Godspeed*, the *Susan Constant* and the *Discovery* landed three centuries ago. The locality is one of the richest in historical associations, even of the War of Independence and the Civil War. The historical collections in the exposition included many exhibits from the north and west and some interesting contributions from the Colonial Dames, the Daughters of the American Revolution and the United Daughters of the Confederacy. There were many exhibits from the south itself, including a series of portraits of the governors of Virginia. Then again, near by in Hampton Roads, there were seen not only a fleet of vessels from the navies of many nations, but the old ironclads *Merrimac* and *Monitor* reproduced as they appeared in their famous duel in the Civil War. Among the other features may be mentioned many valuable documents sent by the state departments; an arts and crafts village where were shown the processes of working in copper, iron, silver, pottery and wood; a good aquarium of both sea and fresh-water fishes; a series of boat-races, motor-boat races and air-ship trials; and an educational exhibit of the standard results of school work as well as a model school in which modern methods of teaching could be studied in their operation.

Jamestown, a city of Chautauqua County in western New York, on Chautauqua Lake, 58 miles southwest of Buffalo by rail. It is on the New York, Lake Erie and Western and Lake Chautauqua railroads. It has all the adjuncts of a progressive city, including electric lights, electric railways, good schools and adequate water-works. It has manufactures of pianos, furniture etc. Its industries also embrace the manufacture of alpacas, woolen and worsted goods, plush stuffs, boots and shoes. Power is furnished from two electric plants, and the natural gas supply leads to extensive use of gas-engines. Jamestown has 25 churches, 11 grade-schools, a high-school, a parochial school and night-schools conducted by the city and also the Y. M. C. A. Prendergast free public library has an excellent collection of paintings besides 17,500 volumes and 5,000 reference-works. Population 50,000

Jamestown, Va., is situated on a small peninsula, which lies off the northern bank of James River, about 35 miles above where this river broadens into Hampton Roads and empties into Chesapeake Bay. As early as 1526 some Spaniards tried in vain to settle in the neighborhood. In 1607, on May 13, three British ships, sent from London by the London Company, under Captain Christopher Newport, landed their crews and about 105 colonists upon this low-lying peninsula, where it was hoped to rest secure from Indian attacks. Edward Wingfield was chosen president by a council of six who had been appointed by the London Company. The ships sailed for England, leaving but a scant and wretched supply of food. The Indians threatened the colonists, while disease and mutiny were added to hunger. This year occurred Smith's romantic adventure with the Indians, which seems to have resulted in much good for the colonists. But in spite of Smith's resourcefulness only 38 survived till the ships returned with more colonists and with provisions. In 1608 Smith was chosen president, and it was chiefly due to his wonderful courage and skill in dealing with the Indians that the colonists were saved from massacre and that corn was brought in for food. The colonists for the most part were gentlemen and tradesmen, and could help themselves but little in the wilderness. Thus they struggled through the winter of 1608. In 1609 Smith suffered a terrible wound that compelled him to sail for Europe. An inferior grade of colonists arrived, who neither could work nor wished to try. The winter of 1609 therefore was a time of terrible suffering, known as the Starving Time. Of 400 men and women that Smith left only 60 survived till spring, when a small fleet that had been delayed by storm and wreck arrived with some little provision. The colonists, new and old, decided to abandon the settlement; but as they sailed down the river, they saw, far out in Hampton Roads, the long-boat of Lord Delaware's ship, which told of a large and well-equipped fleet at hand. Sir Thomas Dale was then appointed high marshal, and with great firmness and wisdom brought peace to the colonists, compelling all to work by removing the privilege of sharing in the common store of the colony. A deputy governor, Argall, ruled despotically for two years (1617–19), so that, when George Yeardley was sent out as governor to supersede him, the people demanded self-government to secure them against such danger in future. Accordingly a House of Burgesses was summoned, the first representative assembly in America. This incident closes the separate history of Jamestown, which henceforth lived only as part of the colony and then the state. The town itself was burnt by Bacon (1676) and then abandoned as unhealthy; but a tower remains to mark its site, which now is largely under water.

Janauschek (*yä'nou-shĕk*), **Fanny,** was born at Prague, Bohemia, July 20, 1830. She was devoted to the stage from childhood.

and at an early age showed great artistic talent. Her life as an actress began, with much success, at Cologne. She appeared in the principal cities of Germany, Great Britain and the United States. She was an actress of great power, but lacked the finer touches of her art. She died in 1904.

Janesville (*jānz'vĭl*), a city and the seat of Rock County, Wisconsin, is situated about seventy-one miles southwest of Milwaukee at the junction of four railways. It lies between bluffs in the narrow bottom land of the Rock River, which is crossed here by four bridges. The river is also crossed by dams and its water-power is utilized in the numerous manufacturing establishments of the city. Among the principal industrial plants of Janesville are flour, cotton and woolen mills, foundries and numerous factories.

Janesville is the center of a large tobacco-growing district, and large warehouses for sorting and packing tobacco, employ many of the city's workers. It is the seat of the Wisconsin School for the Blind. In 1930 the population was 21,628.

Janizaries (*jăn'ĭ-zâ-rĭz*) (a Turkish word meaning new soldiers), the first regular standing army of the Turks, formed by Sultan Orkhan in 1330. They mainly were young Christian prisoners, who were compelled to believe in Mahomet. In 1362 the army numbered 10,000, and for some time prisoners were added, but the force became privileged and honored, so that many young Turks sought to be admitted into their number. At the head of the force was an *aga* or chief. In peace the janizaries acted as police, and in war they served on foot, being noted for bravery. The sultan's bodyguard was formed of them. Their history is replete with conspiracies, assassinations of sultans, viziers and agas. More than one sultan attempted to reform or disband them. At last Sultan Mahmud II, in 1826, having organized a new force after the pattern of the European armies, displayed the flag of the prophet, and after hard fighting drove the janizaries into their barracks, which he burned, 8,000 perishing in the flames. Not less than 15,000 were executed, and more than 20,000 were banished. By a proclamation, on June 17, 1826, the janizary forces were finally disposed of, and their place taken by the *nizam*, the modern regulars, formed on the European plan. There are in the Imperial Museum at Istanbul about 150 life-sized figures of janizaries. The name is frequently applied, although incorrectly, in literature to any Turkish troops.

January (*jăn'ū-ā-rĭ*), the first month of the year in the Gregorian calendar. It was named from Janus, the god who in the Roman mythology presided over the origin of things. To the Scandinavians it was the month of Thor. In England, January was made the first month of the year by an act of Parliament in 1751.

Janus (*jā'nŭs*), an old Italian god, who was supposed to guard the gates of Rome. In every undertaking the pious Roman prayed for the blessing and help of Janus. He is represented with a sceptre in his right hand and a key in his left, sitting on a golden throne. He has two faces, one youthful and the other aged, the one looking forward and the other backward. Numa devoted to him the passage close by the Forum at Rome. This passage, often called a temple, was simply a double-doored gateway, which was sacred and contained the statue of Janus. This was open in time of war, and closed in time of peace. So constant were the Roman wars, that this gateway was only three times closed in 700 years. The month of January is named for him.

Japan (*jȧ-păn'*), or **Nippon,** the land of the Rising Sun, is an island empire of the Far East, comprising five main islands, about six hundred smaller islands and island groups, the peninsula of Chösen or Korea, and the southern half of the island of Sakhalin or Karafuto. It is situated in the north Pacific Ocean off the coast of China and Siberia, reaching from the southern point of Formosa (Taiwan) which is due east of Hong Kong, to the last of the Kurile Islands in the north, which are a few miles south of Kamchatka. The ancient empire of Japan proper bears a strong resemblance to the British Isles in size, situation off the Mainland coast, coast line and population. The area of Japan proper is 147,592 square miles. The total area, including Chösen, Formosa, Japanese Sakhalin, the leased territory and the mandates is 260,644 square miles.

Surface. Japan is one of the most mountainous of all the countries of the world. Few places are far removed from either mountains or sea. The islands of the empire are actually the crests of a mountain chain, 900 miles long, and crescent-shaped, rising from the deep ocean bed. The chain has many volcanoes but is not of volcanic origin. The most northerly island, Yezo (Hokkaido) alone has eight active volcanoes. The sacred Fuji, the Fire-Goddess Mountain, lifts its cone from the sea to a height of 12,395 feet. Asama rises to 8,260 feet; Shirane, 7,422; Bandai, 6,037; Onsen, 4,865, and Sakurajima, 3,742. Each of these is volcanic. There are many sulphurous springs and solfataras throughout the empire, and earthquakes frequently occur.

The plains, most of the valleys, and the lower slopes of the hills are highly cultivated. Japan makes use of every foot of space. There is luxuriant vegetation, and many beautiful and rich flowers. There are forests of pine and oak in Yezo; bamboos, palms, and 150 species of evergreen trees are common. The characteristic trees of the empire are the lacquer-tree, camphor-tree, paper-mulberry and the vegetable wax-tree. Japan is famed for its many cherry trees which make the country a riot of delicate bloom in the springtime; the lotus beds of summer, and the magnificent chrysanthemums of autumn. There are not many wild animals and few domestic animals. Fowl and fish are common, especially millions of waterfowl, and the carp and goldfish of garden ponds,

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SCENES IN JAPAN

1.-Peasant and Mt. Fujiyama. 2—Flower garden. 3—Babies and big sisters. 4—Jinrikisha men and cherry blossom time. 5—Japanese Bed. 6—Combing out flax seed.

the salmon of Yezo and the lobster. Japan is a country of rich and exquisitely beautiful scenery, amid which the lovely gardens with their bridges and gates and shrines add to the picturesque effect of the whole.

There are innumerable streams, swift and turbulent, but very few of them are navigable, although they afford a vast, undeveloped supply of hydroelectric power, and there are no rivers of size. Harbors are few along its 17,150 mile coast line, but they are deep and spacious. The frequency of earthquake, and of fire and tidal wave, has resulted in architectural designs based on light, flat and elastic materials—bamboo, dove-tailed woodwork, paper screens—which are quickly and cheaply erected buildings that actually add a picturesque beauty to the land and yet resist its disasters remarkably well. Japan has a clean, gay, fragile air, as if it were always in holiday. There are myriads of waterfalls on the brief swift streams, which add to the scenic beauty. At Nikko, the "Splendor of the Sun" makes an unbroken plunge of 350 feet of magnificent loveliness. There are many mineral springs.

Climate. Japan is composed of so many different parts that there is wide variation in climate. The average annual temperature at Tokyo is 57.7 degrees, with an occasional drop to 16.2 degrees in winter or rise to ninety-six degrees in summer. At Nagasaki the lowest winter temperature reaches only 23.2 degrees, and at Hakodate the range is between eighty-four and two degrees. The Pacific side of Japan has delightful winter weather due to the Japan current which flows by that coast. There is abundant rainfall, varying from year to year, but averaging 145 inches. Typhoons are liable to occur in summer and autumn, being far more destructive in the latter season. There are frequent heavy snowfalls on the mountains of Yezo, falling on the slopes which face the Sea of Japan.

Minerals. Japan has varied mineral deposits although the quantity is limited. She has become a heavy producer of coal, having 874,600,000 tons of known reserves and 6,961,000,000 tons of probable reserves. Except for one field of 60,000,000 tons of anthracite, all of this coal is bituminous. In 1932, Japan produced in Japan Proper 28,000,000 metric tons. In 1931, the 27,987,000 tons produced in Japan Proper was augmented by 8,300,000 in the South Railway Zone, 938,000 in Chösen, 1,422,000 in Formosa, and 638,000 in Sakhalin. In 1932, there were produced 1,630,000 barrels of petroleum. Japan has worked the sterile, rocky ridges for ages to secure the underlying iron which was originally worked into swords for the Samurai. During the World War it was difficult to secure iron, and Japan increased her foundries from twenty-nine to 250. In 1932 there were 1,030,000 tons of pig iron, and 2,400,000 tons of steel ingots produced. Copper is the only metal available in quantities beyond local needs, as Japan has such a vast population to support on such a small area, three-fourths of the mountain land being uncultivable. There is also some gold and silver, much sulphur and graphite, lead, and ancient beds of kaolin, that have made Japan porcelain famous for ages.

Production and Industry. A large percentage of the area of Japan is infertile, but the country is primarily dependent upon agriculture, although by intensive cultivation and steady industry the land cannot produce enough for local needs. About three-fifths of the arable land belongs to small peasant proprietors who own about an acre each. More than half of the land is planted in rice which is the staple food of the country, although annual imports are necessary to feed the people. In 1932 there were 14,241,995 acres of land in cultivation, of which 7,318,027 acres were planted to rice. In 1932-33 were harvested 10,920,800 metric tons of rice. In that same year were produced 852,800 tons of wheat; 1,692,600 tons of barley, and 62,700 tons of tobacco. The 1931-32 harvest figures for tea were 38,300 tons; soy beans, 328,000 tons; potatoes, 922,100 tons, and sugar beets, 177,500 tons. There are also large crops of red beans, millet, maize, rye and buckwheat. Mulberry trees are widely grown and silk cocoons produced, to the value of 275,555,721 yen in 1931. Raw silk exports in 1932 were valued at $107,483,000 of which $106,188,000 worth went to the United States, representing eighty-two per cent of the raw silk imported into the United States.

The forest area was 49,128,737 acres in 1931, of which 17,902,696 acres are State-owned, and 3,156,274 acres belong to the Imperial family. The forest production is valued at approximately $120,000,000 annually. The livestock in 1930 numbered 1,490,000 horses (small, more like donkeys); 1,498,000 cattle; 24,000 sheep; 217,000 goats; 742,000 swine, and 1,498,260 oxen. Fishing is an important industry. The salmon from the Yezo are salted for the southern market. The salt-water fish are chiefly the red-fleshed maguro and the tai, eaten raw. There are many oysters and lobster. In 1930, the value of fish from the sea amounted to 162,928,226 yen, with products valued at 146,969,338 yen. In 1931, 8,660 motor boats were used in deep sea fishing. Crabmeat is a heavy export.

The number of industrial establishments in Japan doubled from 1908 to 1918, and again from 1918 to 1924. On December 31, 1930, there were 62,234 factories employing 1,683,563 workers. The principal manufactures are silk and cotton goods, earthenware, lacquered ware, matting, oil, leather, toys, and paper and paper products.

Trade. Japanese competition in foreign markets has been an irritating source of danger to world powers. This competition has perhaps been more keenly felt by Great Britain than any other nation, but with Japan's invasion of Latin American markets, the United States has become increasingly aware of a powerful competitor. It has been stated that Japan's exports increased fifty per cent in 1933 while the exports of other nations showed a decided decrease. The cheap products with which Japan has been flooding foreign markets have found ready customers due to the decreased buying power of the people. Japan, however, is dependent upon other nations, chiefly the United States, for her raw cotton, iron and steel, oil, wheat, and lumber imports. Conscious of this fact Japan has sought in recent months to negotiate for a trade pact with the United States. Many European powers have attempted to place restrictions upon Japanese exports. Japan, therefore, is most anxious to conclude a trade pact with the United States and thus avert an economic conflict with a country with which she is most anxious to remain on friendly terms. Japan urges a pact which would guarantee the free entry of silk into this country and of American raw cotton into Japan. A Japanese trade mission is expected to arrive in the United States at an early date to negotiate a trade agreement which is aimed directly at expanding trade. Japan's Foreign Minister in a "good will" note to the United States on March 21, said, "I firmly believe that, viewed in the light of the broad aspect of the situation and studied from all possible angles, no question exists between our two countries that is fundamentally incapable of amicable solution. I do not doubt that all issues pending between the two nations will be settled in a satisfactory manner, when examined with a good understanding on the part of each of the other's position; discussed with an open mind and in all frankness and approached with a spirit of co-operation and conciliation.

"I can state with all emphasis at my command that the Japanese nation makes it its basic principle to collaborate in peace and harmony with all nations and has no intention whatever to provoke and make trouble with any other power."

On March 9, a Trade Defense Bill was introduced in the Japanese Diet by which the Government would be empowered to increase or reduce tariffs and to restrict or prohibit all exports and imports into the country. A statutory committee is to be appointed to serve as an advisory body to the Government in such matters. One week later, on March 17, Japan withdrew from the Geneva Convention of 1927. As a member of that convention Japan was pledged not to increase tariffs or trade obstruction.

The Anglo-Japanese Trade Conference which convened in London in February was doomed to failure. After five weeks of negotiating the Conference adjourned on March 14, and efforts to perfect an agreement between the two powers were abandoned. It was pointed out that since 1929 the world export trade in cotton goods has decreased to 5,000,000,000 square yards annually. Prior to 1929 that trade totalled 8,000,000,000 square yards annually. Sir Thomas Barlow, representative of the British Government at the Conference, declared that despite the evident decline in the cotton goods trade during the past four years, Japan's exports have steadily increased. Japan's policy of flooding world markets with cheap merchandise has been hailed as "unfair competition" by Great Britain. There prevails in Japan a system of lower wages, longer working hours and subsidized shipping, a system with which other countries are unable to compete. The depreciation of Japanese currency, the yen in particular, since Japan went off the gold standard has also played an import rôle in Japan's ability to become a competitor in world markets feared by the majority of nations. It was proposed at the London Conference that the markets of the entire world be divided. The proposal was promptly rejected by Japanese representatives who insisted that Great Britain was competent only to make agreements for the British Isles and Crown colonies. The Japanese delegation also declared that any agreement concluded by London is not binding upon British Dominions in that such dominions maintain their own fiscal autonomy. The failure of the Anglo-Japanese Trade Conference to effect a trade agreement between the two powers has been heralded as an indication that a trade war for the world's markets is now inevitable. Unfair Japanese trade competition has long been a source of trouble for the entire world.

Franco-Japanese Trade Pact. On February 13, representatives of the French National Association for Economic Expansion were authorized to sign a Franco-Japanese agreement which provides for a fifteen year credit to the South Manchuria Railway. The railway at the present time is owned by Japan and is under the direct supervision of the Commander-in-Chief of the Kwantung Army. News of the agreement was given out by Andre d'Oliver at Tokyo, the representative of the Far East in the National Association for Economic Expansion. The partnership created by the agreement will have a board of twelve members, six representing Japan and six France. The President of the company is to be Count Hirotaro Hayashi, President of the South Manchuria Railway. The other five Japanese members will be directors of the railway. The vice president of the company will be Etienne Fougere, President of the French National Association for Economic Expansion. This association is composed of thirty-eight industrial exporting interests that are willing to extend credit to Manchuria for railway and construction supplies. Similar trade pacts may develop for Manchukuo with nations that recognize this independent state created by Japan.

Transportation. In 1931, Japan had 13,363 miles of railway, 1,835 miles of which are electrified, and 9,778 miles State owned. The Shimizu tunnel, about six miles in length and the longest in the Far East, was opened in September, 1931. Five shipping companies are subsidized by the Government for foreign trade to which there are forty-two ports open, the most important being Yokohama, Kobe, Osaka, and Niigata. There were 585,449 miles of highway in Japan in 1929. Air traffic is highly developed.

Population. According to the census of 1930, the population of Japan Proper was 64,447,724, a gain of 7.9 per cent in five years. The population of the entire empire was 90,395,041. In 1929, there were 39,199 foreigners residing in Japan and 762,572 Japanese subjects residing abroad. The aborigines of Japan were the Ainus. The present Japanese are a fusion of Mongoloid races entering from north and south, with local Ainu intermixture. The principal cities of Japan, with their populations in 1930, are: Tokyo, the capital, 4,978,399; Osaka, 2,453,573; Nagoya, 907,404; Kobe, 787,616; Kyoto, 765,142; Yokohama, 620,306; Hiroshima, 270,417; Fukuoka, 228,289; Nagasaki, 204,626, and Hakodate, 197,252.

Education. Elementary education is compulsory in Japan. In 1930, there were 1,397 kindergartens with an enrollment of 9,860,877 and 233,476 teachers; 555 middle schools for boys, with an enrollment of 548,584 and 13,775 teachers; 970 girls' high schools with an enrollment of 367,726 and 14,881 teachers, and thirty-two high schools with enrollment of 18,110 and 1,280 teachers. In addition, there were 15,284 preparatory technical schools with 1,226,835 pupils and 18,052 teachers; 957 technical schools with 280,904 pupils and 13,945 teachers, and special schools, special technical schools, normal schools, and schools for the blind and deaf mutes.

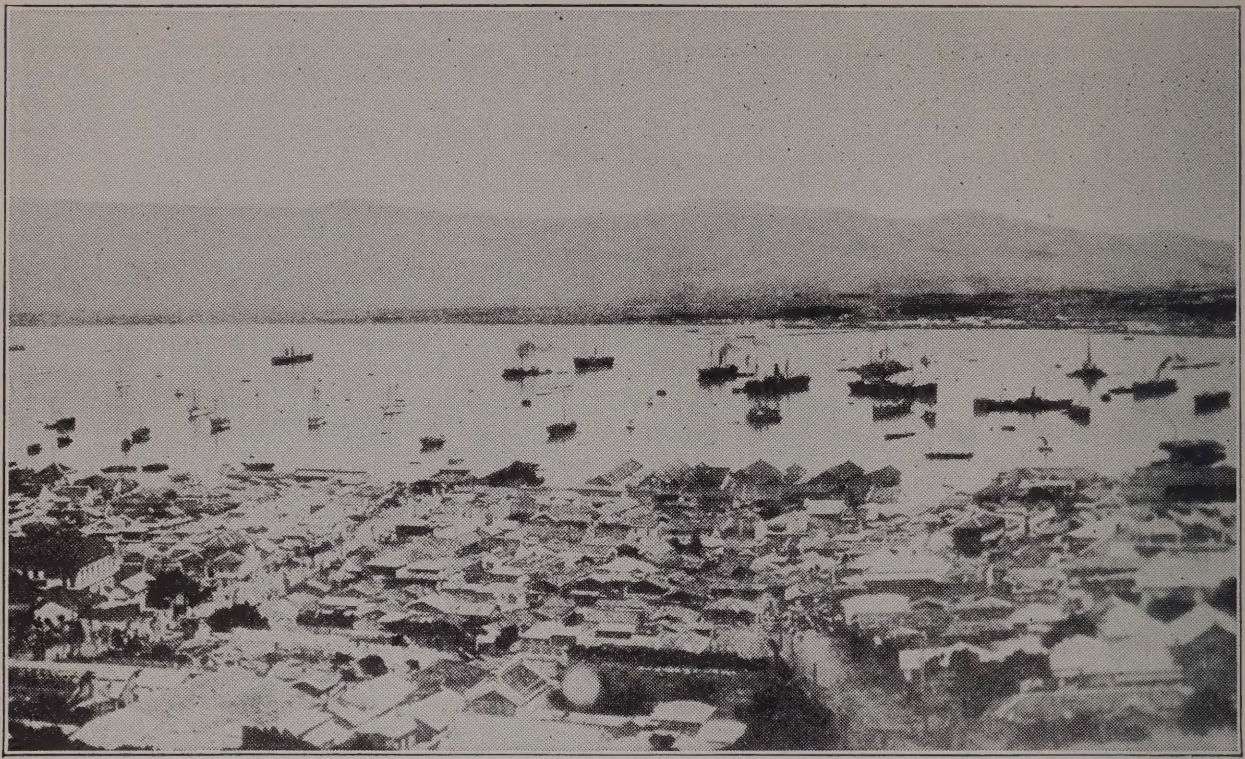
Japan has five Imperial universities located at Tokyo, Kyoto, Sendai, Fukuoka and Sapporo, serving a total of 19,125 students, and forty-one other universities and colleges, serving 48,430 students.

Government. Japan is governed under the Constitution of February 11, 1889, under which the Emperor is sovereign and exercises all executive power with the advice and assistance of the Cabinet Ministers, who are appointed by him and responsible to him. He has also a Privy Council to consult on important State matters. With the consent of the Imperial Diet he exercises the legislative power. The Imperial Diet consists of the House of Peers and the House of Representatives. The former is composed of 404 members, chiefly of the Nobility, and the House of Representatives of 406 members chosen from the electoral districts.

The Hakodate Disaster. One of the most catastrophic events in the history of Japan occurred on March 21, when a devastating fire swept the city of Hakodate, the largest and most important port in northern Japan. The fire was preceded by a terrific wind and rain storm which tore through northern and western Japan. More than 20,000 homes in the city were totally destroyed. One thousand were reported dead and more than 3,000 injured. Eighty per cent of the city was reduced to a mass of ruins. The main business section of the city, where the fire started, was a heap of ashes. The post office building alone remained standing. A small section of Hakodate in the southeastern part of the city received but slight damage. The wind raging at seventy miles per hour served only to cripple the efforts of firemen who sought to extinguish the devastating flames. The 200,000 inhabitants of Hakodate found themselves encased in a living inferno. Refugees fled from death, abandoning homes and possessions. Many sought refuge on the ships in the harbor and several hundred lost their lives in the sea. An appeal was made to Tokyo for relief. The stricken city suffered a hailstorm the following day. Shacks and barracks were hastily constructed to house the thousands of homeless. Doctors, nurses, provisions, and clothing were rushed to Hakodate from Tokyo and all parts of the country. Two Americans teaching in the Iai school for girls lost their lives in the fire. The property loss in Hakodate has been estimated at one hundred million yen. Reconstruction of the devastated area is already under way.

Naval Policy. One of the most vital problems demanding the attention of Japan, the United States and Great Britain today is the naval question. Japan's discontent with the present ratio, 5-5-3, is well known in both British and American circles. The ratio allotted Japan a subordinate position in comparison with that occupied by the United States and Great Britain. She demands naval equality and regards the Washington Treaty of 1922 "as totally inadequate from Japan's standpoint." Appropriations have been made in the 1934-35 Japanese budget which by 1936, when the naval treaties expire, will amount to 487 million yen. In 1936 Japan will have a full treaty strength navy of 183 vessels and a total tonnage of 775,370. In her attempt to achieve naval parity with Great Britain and the United States, Japan has recently been negotiating a new navy limitation treaty in 1935 to replace the present treaties which expire in 1936. Preliminary negotiations have already been put under way with the United States in an attempt to persuade the Roosevelt Administration to consent to naval parity. Thus far no definite encouragement with regard to naval parity has been forthcoming from the United States. Secretary Hull's replies to Tokyo have been "wholly noncommittal." Japan regards the naval policy being followed by the United States as dangerous to other nations. Vice Admiral Nobumasa Suetsugu, Commander-in-Chief of the Japanese Navy declared the policy is a violation of the principles outlined in the Kellogg Pact. The naval question is of extreme importance and is so considered by Great Britain and the United States because of the fact "that unless Japan's demand for naval equality is altered the breakup of the next conference with Great Britain and the United States is almost a certainty."

Russo-Japanese Relations. Off the coast of Siberia is the island of Saghalien, a little less than the size of the state of Maine. In 1809 Rinzo Mamiya, a Japanese, explored the island



HAKODATE © *Acme*

A panoramic view of the largest and most important port of northern Japan prior to the disastrous fire which swept the city on March 21, 1934.

HAKODATE IN ASHES © *Acme*

A view of the important city of Hakodate after it had been ravaged by the flames of the devastating fire which occurred on March 21, 1934.

and took possession in the name of Japan. Sixty-five years later the czar of Russia forced Japan to cede the island to his empire. In 1905, after the Russo-Japanese War, Japan regained 13,100 square miles of the southern part of the island. Later it was discovered that the northern part was rich in oil, a mineral which is nearly lacking in Japan. In 1925 Japan and Russia (USSR) signed a treaty whereby, in return for recognition on the part of Japan, Russia agreed to grant Japan many oil concessions in the northern part of Saghalien, to extend the fishing privileges Japan already enjoys in Siberian waters, and to discontinue attempts to sovietize the Japanese dependency of Korea, as well as to open Siberia to Japanese immigrants. By a treaty with Korea, 1905, Japan obtained the control and direction of the external relations and affairs of that country, and became represented at the capital, Seoul, by a resident general. In 1910 Korea was annexed to Japan.

The persistence of Japanese encroachment in the Far East has recently given rise to determined opposition by Russia against any imperialistic designs which Japan may entertain with regard to extending her world empire into spheres now under Soviet control. Much talk has circulated throughout the world concerning a Russo-Japanese War in the near future. Russia has voiced a determination to resist by armed force any attempt on the part of Japan to extend her power as was done in Manchuria. Japanese intentions in the Far East and in Outer Mongolia are as yet undefined. In an address to the Japanese Diet in January, Foreign Minister Hirota is quoted as having said, "It is most surprising and regrettable that the Soviet Union should now take to broadcasting at home and abroad, through the press and other channels, unwarranted criticisms directed against Japan and circulate exaggerated stories about aggravations of this and that situation, evidently for political and diplomatic purposes which such rumors are calculated to serve."

In September, 1933, six Russian officials of the Chinese Eastern Railway were arrested in Manchukuo. It was not until January 14, that Manchukuo agreed to release these Soviet officials. It was believed that with their release and the resuming of negotiations in Tokyo with the Russian Ambassador for the sale of the Chinese Eastern Railway that some conciliatory agreement would be reached by the two powers which would relieve the tension between them. Soviet Russia, however, continues in her preparations for war in the Far East having openly declared that a Russo-Japanese War is inevitable. Several interpretations have been given to the Russian activities, all of which are significant and will bear watching. A fair settlement through diplomatic means seems impossible at the present time.

History. The early history of the Japanese, as of all ancient peoples, is shrouded in myth. Like the Greeks and Egyptians their origin is ascribed to deities, and the pedigree of the present reigning family is traced back to the sun-goddess. The emperor Jimmu, 600 B. C. is considered an historical personage. It was not until the tenth century of our era, however, that true historic records began to be kept. The Buddhist religion, the literary language and printing, with many of the arts of Japan, were introduced from China. But the political system was a native, free evolution, unaffected by outside influence. Originally the active rulers, the mikados, gradually resigned leadership to a military chieftain or shogun, they retaining their prerogatives and semi-sacred character in a life of enervating seclusion. Japan became a hermit-empire, the inhabitants forbidden to leave the country under pain of terrible punishments. Until 1543 communication was held only with China and Korea. For nearly a century thereafter the Portuguese and the Dutch East India Company carried on a precarious trade with Nagasaki. But from 1638 to 1854 no foreign vessel anchored in any other harbor of Japan.

In these two centuries the emperor was a sacred recluse in the temple-palace at Kioto, the shogun military dictator in Yedo (now Tokyo). Troops were supplied by 250 *daimios* or feudal lords of great estates, each of whom had bodies of armed retainers known as the *samurai.* Shogun, daimio and samurai became hereditary in families and formed a military class that dominated the empire. The mass of the people were agricultural laborers and artizans. Protected by their masters, unable to leave the estate where they were born, unhurried, undisturbed by the wars of clans, all their original genius and aspirations were turned back on their work. They acquired monumental patience, tactile skill and an exquisite exuberance of fancy that fills the world with wondering admiration of their work to-day. It was in the middle ages of Europe that the artist was set free in the artizans who built the great cathedrals and filled them with paintings and sculptures. So not all was evil in Japan's hermit centuries that brought a dozen native arts to such perfection. Unnoted, these millions of nameless toilers filled the land with splendor, while the sacred mikados dozed away the idle generations.

At Kioto the shoguns became dictators and the daimios rebelled against their despotic rule. Since the daimios furnished the revenue and the soldiers, they demanded a voice in affairs, as did the nobles of England when they wrested *Magna Charta* from King John. Five centuries in arrears with Europe, Japan was enacting the drama of civilization. With brief intervals of quiet the country was in a state of civil war from 1603 to 1854 without dislodging the shogun, because the daimios could never stop fighting each other long enough to unite against the common enemy. He was tottering to a fall, however, when Commodore Perry, U. S. N., arrived in Tokyo in a war-vessel in 1854, and demanded that the harbor be opened to American trade. Mr. Townsend Harris, the first American envoy, had a letter from President Fillmore which he refused to deliver to anyone but the ruler of the land who was thought to be the shogun. Then Admiral Stirling steamed into Nagasaki with Lord Elgin aboard to present English demands. The shogun saw an opportunity to bolster his rickety throne by concessions to these foreign invaders. This so incensed the daimios that the land burst into a conflagration of revolution. Within the next ten years eighteen nations forced an entrance into Japan. The powers at length discovered that they had been hoaxed and that the sun and center of authority was in the hermit emperor at Kioto. Their support withdrawn, the shogun abdicated, and sixteen-year-old Mutsuhito was swept out of his spiritual retreat and onto a very temporal throne in Tokyo.

Modern Japan. The history of modern Japan dates from 1868, the 'Era of Enlightened Peace' as it is known to the Japanese. The fifteen years since the western powers forced an entrance, had united the country, brought forward a number of remarkable men and fitted them for the task of reorganizing the empire. That Japan was far advanced toward political and social changes at the time was shown by the instant advantage taken of the favorable opportunity. Incensed by the foreign invasion, but far from being frightened by it and, indeed, accepting it and determined to turn it to Japan's advantage, scores of daring young nobles stole out of the country in the 50's, a thing still forbidden. In the spirit of scientific explorers they went to observe the occidental world. They travelled, attended colleges, studied governments, inventions and institutions. There seemed no bias or prejudice in their minds that prevented the appropriation of any idea or device useful to them. In a dozen years they returned to Japan to lead the revolution and to form the mind of their holy recluse, the young emperor.

The first thing the boy-emperor did was to receive the foreign envoys and to permit consuls to reside in the treaty-ports. The second was to appoint Japanese representatives in foreign capitals and ports with instructions to keep their eyes open and report all they saw. Next, he rode through the capital in an open palanquin, and forbade even a coolie to prostrate himself. Then he announced his intention of establishing a constitutional, representative government as soon as the people should be educated in the system of public schools to be opened. The next year he called the daimios to Tokyo and demanded of them as a patriotic duty, that they give up their feudal estates, titles and privileges, and release their samurai to form a national standing army. This was a bitter dose, and the daimios did not all swallow it willingly. None the less the thing was done, with the result that Japan in 1871, like Germany almost simultaneously became a strong, centralized empire by a federation of states. A new nobility in five orders (princes, then marquises, counts, viscounts and barons) was created from complaisant daimios, including the chastened shogun, and from the patriots and statesmen who formed the new empire. These were to make up the membership of the house of peers under the constitutional government.

The promises made in that trying, formative time were carried out to the letter. For twenty-two years the emperor remained, in theory, an autocratic ruler, but in fact he acted under the advice of the imperial council, and the machinery of a modern government was installed a wheel at a time. Within a few years courts of justice were established, and public schools from kindergartens to a university were opened. The army was organized on the model of that of Germany; the navy after that of Great Britain; the department of justice and police system after that of France. The United States and England furnished the pattern for the constitution, the model for the legislative and executive functions of government. In 1875 an appointive, deliberative body was formed to discuss measures and make recommendations to the emperor and his council. It served as a school to educate future legislators. In 1890 the Constitution, on which Marquis Ito and the elder statesmen had worked for ten years, was proclaimed, and the first election ordered. The franchise was not universal, but was restricted by educational and property requirements. It is being extended gradually. The first parliament was opened with 364 peers and 375 members of the House of Representatives. Marquis Ito was called to form a new cabinet in harmony with the people's will.

It was 1895 before the disabilities imposed by foreign powers were removed and Japan had full, internal jurisdiction or adequate revenues. Earthquake, floods and failures of the rice-crop visited her. A war with China was fought to a successful issue, but aside from greater internal independence her victory brought her little advantage. She secured the cession of Formosa and the Pescadore Islands, but the great powers united to check her ambition on the mainland. She was forced to abandon Shantung province, which she had conquered, and the fortified peninsula of Port Arthur, which she had carried by brilliant assault. Within two years, through treaties, Russia occupied Manchuria and was entrenched in Port Arthur, and England and Germany were in Shantung, the three controlling the Gulf of Pechili, the approach to Pekin. Japan felt that her national existence was threatened. But government and people were so quiet that the western world thought her helpless and acquiescent. Viewed in the light of after events 50,000,000 people now seem to have been in a conspiracy of silence during ten long years of preparation for war. Russia was the only power whose occupation of Chinese territory was backed by land forces and fleet. The Japanese minister in St. Petersburg made persistent demands that Russia keep her promises to get out of Manchuria. Diplomatic negotiations dragged through two years. Twice Russia set dates for the evacuation, but it was only to gain time to strengthen her fortifications and concentrate troops. Suddenly, when Russia had a quarter of a million soldiers in Manchuria and Japan was expected to back down, diplomacy was abandoned.

On the night of February 8, 1904, Japanese warships fired on Port Arthur and bottled up the crippled Russian fleet. Within two weeks Japan was landing troops at Chemulpo, Korea, the port of Seoul, far up in the Yellow Sea, capturing or sinking two Russian cruisers. Then followed the swiftest, most business-like war that the modern world has ever seen. The fortified Yalu River, bounding Korea, was crossed on May 1. After the battle of Liao-Yang in August the Japanese forces divided, one moving on Mukden, the other attacking the defenses of Port Arthur. Port Arthur and the shattered fleet in the harbor were surrendered on January 1, 1905, after a five months' bloody siege, during which the world stood aghast at the fanatical patriotism and military genius of the Japanese. On the twelfth of March Mukden fell, the Russians, with a loss of 150,000 out of 375,000 men, retreating 160 miles northward. On May twenty-seventh and twenty-eighth, the vessels of the second Russian fleet, sent to the relief of Port Arthur from the Baltic Sea and flying to the safety of Vladivostok harbor, were captured or sunk in the Japan Sea. It furnished the world its first example of a great naval battle in open sea, with modern battleships and guns. The war lasted only sixteen months and ended in complete rout for Russia. The financial resources of both nations were practically exhausted. Through the friendly intervention of President Roosevelt a treaty of peace was signed in Portsmouth, New Hampshire, on August 29, 1905. Russia surrendered all claims in Manchuria and ceded the southern half of Sakhalin Island to Japan. Japan has since established a protectorate over Korea without protest from the powers, is developing the Russian railroads in Manchuria, and continues to occupy Port Arthur. She has added some twenty Russian vessels to her navy and the names of Admiral Togo, Field-Marshal Oyama and Generals Kuroki, Nogi and others to the world's roll of military and naval heroes.

Gradually Japan has been growing more democratic, yet until 1925 privilege of voting was so restricted that only about three million Japanese could qualify. In 1925 the voting franchise was extended to all Japanese male citizens who have reached the age of thirty, have a definite place of residence, and are not public charges. The law became effective in 1928.

Nine-tenths of the Japanese in the United States are coolies, and are concentrated in Washington, Oregon and California, chiefly in the cities, mines and fruit ranches where their competition with white labor aroused hostility. In 1906 the feeling against the Japanese was so strong in San Francisco that they were refused admission to the schools. Japan entered a protest against this discrimination, claiming that it violated treaty rights. The matter was compromised by admitting Japanese children, but excluding adults and by an amendment to the immigration laws excluding Japanese laborers from the United States. All matters of dispute were settled amicably, and Japan entertained the American squadron, on its cruise around the globe in 1908.

At the close of the World War the Japanese navy ranked third in power, and the Washington Conference on Limitation of Armaments in 1921 perpetuated that rank. With a huge empire population, expansion has been deemed necessary. Korea is now Japanese Chösen, and emigrants from Japan are moving into Manchukuo, Mongolia, and Siberia.

Seismatic disturbances are almost a daily occurrence in Japan. The world is not suffering greater earthquake shocks, but shocks are becoming more destructive because of greater building over the earth. On September 1, 1923, Japan's most destructive shock, followed by fire and tidal wave, occurred in her most populous area—around Tokyo and Yokohama; 200,000 people were killed, 2,000,000 rendered homeless. Great sections of both cities were destroyed, including the Imperial University and its library of 700,000 volumes. Money loss amounted to $933,000,000, probably the greatest ever recorded.

On March 7, 1927, earthquake and fire in the northern part of Kyoto province claimed 3,274 lives and left 55,000 homeless. An even greater disaster came in the latter part of September, 1934, when a typhoon swept the richest industrial section of Japan, striking especially at Osaka, Kobe and Kyoto. There were reported 1,600 dead and 5,000 injured, with hundreds of thousands of homeless, and property damage running into tens of millions of dollars. The typhoon raged at 135 miles an hour velocity, out of the north Pacific, sweeping the country from Nagasaki to Nagano, accompanied by giant waves.

Conflict has been smoldering in the Far East fanned by Japanese imperialism. The vast ambitions of Japan's militarists, her abandonment of the obligations incurred by ratification of the Nine Power Treaty, the increasing competition offered by Japan in world markets and her demands for naval parity have made the entire world cognizant of the fact that Japan has come to be a power to be reckoned with, a power which threatens the peace of the world. All is not quiet within Japan itself. Domestic peace and welfare have been subordinated to Japan's policy of providing adequate national defense. During the latter part of January Japan was confronted with a Cabinet crisis. Minor though the crisis may have been, it was indicative of the unrest and Fascist tendencies prevailing in the domestic affairs of the Empire. On January 22, 1934, General Sadao Araki resigned from War portfolio because of ill health. His resignation was interpreted by some factions as a sign of waning militaristic power in Japan. General Senjuro Hayashi, a strong militarist, succeeded him as Minister of War. Militarists have long dominated Japanese policies. Whether or no the foreign policy advocated by General Araki will continue to be followed is still doubtful. On February 8, 1934, Baron Nakajima, Minister of Commerce, resigned. There followed on March 1, 1934, the resignation of Ichiro Hatoyama, Minister of Education. Both of these officials were involved in a financial scandal and accused of accepting bribes. More than one hundred members of the Japanese Diet are said to have accepted bribes in the merger of steel works in Japan.

Communism has not been tolerated in Japan, but, as in other nations of the world, traces of Fascism are being noted in the political and social life of the Empire. The lot of the Japanese farmer is an unhappy one. The agricultural debt of the country, the liquidation of which will provide the solution of the farmer's problem, is enormous. Farm relief legislation, enacted by the Japanese Diet in 1932, has proved inadequate to relieve the farmer's plight. Further subsidies have been deemed impossible in view of the vast sums expended for national defense. Labor in Japan has been victimized by the economic depression and the concentration of economic power in the hands of a few banking houses, the largest of which is the Mitsui Bank. The discontent which has been seething in Japan for the past few years has found expression in several organizations which aim at achieving national unity. The most importat of these groups is the *Kokuhon Sha* which counts among its members Viscount Hiranuma, General Sadao Araki and Koki Hirota. Deprived of constitutional redress, the Japanese people have found recourse in Fascism which at present is overshadowed by Japan's militaristic policies and foreign ambitions.

Japan, Emperor of. See YOSHIHITO.

Jarvis, John Wesley, an Anglo-American portrait-painter, was born in South Shields, England in 1780. He was the nephew of John Wesley, who took him in charge in his infancy on account of the frequent absences of his father, who was a seaman. At the age of five he voyaged with his father to America, and was left by him at Philadelphia. He obtained only a meagre education, but displayed such marked talent for drawing, that it determined his future career. He worked as an engraver in New York, painting on glass in his spare time. He soon became successful and popular as a portrait-painter in oil. He painted the portraits of many prominent men, which now are in the city hall of New York and in the gallery of the New York Historical Society. He died at New York in 1840.

Jasmine (*jăs'mĭn*) or **Jessamine,** a flowering shrub, having most beautiful and fragrant blossoms. Its native home is not known, but it is now naturalized in many parts of Asia and Europe and as far north as Tirol and Switzerland. In more northern regions the jasmine is much grown in gardens, but does not easily endure severe winters. It is a shrub from six to ten feet high with evergreen leaves and white, waxy flowers. A well-known perfume is obtained from the jasmine. The best known American varieties are the Carolina or yellow jasmine, and the Cape jasmine.

Jason (*jā'sŭn*), the son of Æson in Greek mythology. He was the hero who commanded the Argonauts and sailed on a long voyage into unknown seas. Homer, the Greek poet, makes use of the story, popularly known as the "Quest of the Golden Fleece." Jason dedicated the *Argo* to Neptune, the god of the sea. See ARGONAUTS.

Jasper, a mineral, chiefly silica, and regarded as one of the varieties of quartz. There are many kinds of jasper, some of one color, brown, red, yellow, green, white, blue or black, and some variously striped, spotted or clouded with different colors. It is a very abundant mineral, found in veins and imbedded in masses. It has been prized from the most ancient times for all kinds of ornamental purposes, and it takes a high polish. Many kinds of jasper are very beautiful, and it has not only been used for rings, seals and other small articles, but has been employed in the decoration of palaces. It is generally yellow, prettily mixed with brown.

Jassy (*yäs'ē*) now **Iasi**, the capital of Moldavia, the northern division of Rumania, is picturesquely situated on the close of the Kopoberg Mountains, near the borders of Bessarabia, about 200 miles northwest of Odessa. It is an irregularly built and dirty city, with crooked streets and alternate palaces and hovels. It contains many churches, one of which dates from the fourth century, and a university. The town has an active trade in corn, spirits and wine.

Jassy was the capital of Moldavia until 1859. It was the site of the conclusion of peace between Russia and Turkey in 1792. During the insurrection of Ypsilanti the town was almost wiped out by Turkish Janizaries in 1822. In December, 1916, during the World War, it became the capital of Rumania until the country regained its freedom in November, 1918. In 1930, Iasi had a population of 102,595.

Java (*jä'vȧ*), "the queen of the Eastern Archipelago," is an island of the Dutch East Indies and the seat of the colonial government. It is washed on the north by the sea of Java, on the east by the Strait of Bali, on the south by the Indian Ocean and on the west by the Strait of Sunda. Its length from east to west is about 600 miles; the breadth varies from forty to 125 miles. Its area, with Madura, also a possession of the Netherlands, is 51,057 square miles.

Surface. The island is hilly and cut in many parts by deep ravines and rushing streams. A few large bays, protected by islands, furnish a safe harbor for vessels. From end to end of the island runs the mountain chain of Gunug Kendang, which rises about 12,000 feet. There are 43 volcanoes, of which several are still active.

Climate and Drainage. With the exception of some marshy districts on the north coast, the climate is healthy and pleasant. The heat is moderated by sea-breezes, which constantly blow across the island. Along the highlands of the interior the air is not only breezy, but often cold. The rivers are generally small, but become torrents when swollen by the rains; only a few are navigable.

Resources. The chief wealth consists in luxuriant vegetation and richness of soil. Java's producing quality and fertility are limited only by the scarcity of laborers; and in consequence of this fact much of the best land remains untilled. The chief products are rice, sugar, coffee, indigo, tobacco and tea. Animals are not numerous. A few tigers are found, besides rhinoceros, deer and wild swine. There are a few birds, which are noted for their beautiful plumage, but there are hardly any which sing. Though in ancient times Java was called "the land of gold," very little of the precious metal is now found. Silver also is scarce, and there are no other metals.

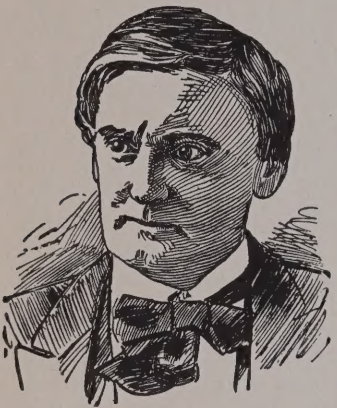
Commerce and History. Java's trade is mainly with Holland, the Straits Settlements and Great Britain. It has 700 miles of railroad, and is joined by cable to Europe and Australia. There were Hindu colonies in Java in 412 A. D. Mohammedanism was brought to the island in the 15th century. European merchants gained a footing in the 16th century, and the Dutch rule began in 1610. The English held Java from 1811 to 1817. In 1825 an insurrection began which was not put down till 1830. The population is 38,000,000, the bulk of which is native. The chief towns are Batavia (population 138,551); Samarang (population 96,600); and Soerabaya (population 150,198). There are 563,000 Chinese, 29,000 Arabs and 80,910 Europeans. The natives are of the Malay race in three divisions: the Madurese, the Sudanese and the Javanese proper. Most of the natives are Mohammedans, though there are 12,000 native Christians. See Wallace's *Malay Archipelago* and Sir Thomas Raffle's *History of Java.*

Jay, any one of a group of birds belonging to one division of the crow family. Jays are birds of moderate size with short, rounded wings and long, rounded tails, and are common in Europe, Asia, and North America. The blue jay of eastern North America remains throughout the year and is widely known. It is blue with black bars on the wings and tail, which are also tipped with white. Underneath it is whitish with a black collar across the chest. Its harsh cry of *jay! jay!* is varied with other notes. It imitates the sounds of several other birds, especially the hawks. It keeps quiet and retired while nesting, but is abundant in the autumn, picking up acorns and chestnuts. The jays as a group feed on seeds, acorns, eggs and young birds The Florida jay and California jay are mainly blue. The Canada jay is slaty or grayish. The common jay of Europe is crested, as are also the blue jay, the Mexican jay and others.

Jay, John, an American statesman and jurist and first chief-justice of the supreme court, was born at New York, Dec. 12, 1745. He graduated at King's College, now Columbia University, and became a lawyer. He was a member of the Continental Congress of 1774–75. As one of a committee he prepared an address to the people of British America and another to the people of Great Britain, which gave him a wide reputation. Jay took a leading part in the debates of Congress and in the secret negotiations with France before the Declaration of Independence. He left Congress to sit in the convention of New York, and drew up the constitution of that state. He was sent in 1779 as minister to Spain, one object being to secure a loan. Before he had a chance to do anything, in the face of the coldest reception by the Spanish court, congress drew on him for $500,000. Rather than let the credit of the country be damaged, he accepted the bills at his own risk. He took part with Franklin and Adams in negotiating the treaty of peace at Paris in 1783; then, going back to America, became secretary for foreign affairs till the adoption of the constitution in 1789. The famous *Federalist,* written by Hamilton, Madison, and Jay, had the greatest influence in bringing about this adoption. President Washington offered Jay a choice of the offices in his gift, and Jay preferred to become chief-justice. In 1794 he concluded a treaty with Great Britain that is known as Jay's treaty. The treaty provided for the payment of British debts and American claims arising out of the Revolutionary War, for the restriction of American trade in the West Indies and for neutrality at sea. It also contained provisions for the surrender to the United States of the northwestern military posts and for defining the eastern boundary between the United States and British America. From 1795 to 1801 he was governor of New York, and refused to be again made chief-justice. Jay was much interested in religious work. His favorite books were the Bible and Cicero. He died on May 17, 1829. See his *Life*, by William Jay, his son.

Jeff'erson City, capital of Missouri and the county-seat in Cole County, on the south bank of the Missouri River. It has several fine buildings and state institutions, the state and supreme court libraries and a Carnegie library, and is the seat of Lincoln Institute, a negro normal school. Coal and limestone are found in its vicinity, and it has manufactories which include farm-implements, wagons, foundry and machine shops, brickyards, etc. It is on the Missouri Pacific and Chicago and Alton railroads. Jefferson City has electric and gas lights, street railways and waterworks. Population, 15,000.

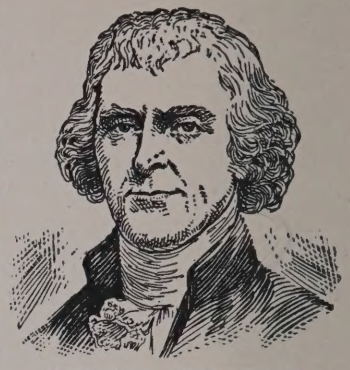
Jefferson, Joseph, a noted American actor, was born at Philadelphia, Feb. 20, 1829. He came of theatrical stock, his father and grandfather being well-known American actors, while his great-grandfather had been a member of Garrick's company. When Jefferson was only three years old, he appeared in the play *Pizarro* as Cora's child, and at four years he was dancing as a miniature "Jim Crow." For many years he went through the severe training of a strolling actor, and then played at New York, where in 1857 he made a success in several characters. In 1865 he visited London, and at the Adelphi theater played his world-famous part of Rip Van Winkle for the first time. With this character his name will be forever associated. Nor is this wonderful, for it is one of the most perfect works of art — beautiful in conception and delightful and delicate in execution. The art was all the actor's; the dramatist had done nothing. Rip was a lazy, good-for-nothing vagabond; but Jefferson made him "the Arcadian vagabond of the world of dreams." In his profession he gained both fame and fortune, and his personal character was high. His death occurred on April 23, 1905. See his *Autobiography*.



JOSEPH JEFFERSON

Jefferson, Thomas. The author of the Declaration of Independence was the most conspicuous and consistent apostle of democracy in America. When he asserted in that immortal document that "all men are created free and equal," it to him was no high-sounding phrase of political philosophy, but a literal expression of the principle upon which he ordered his own life and his relations with men. "Jeffersonian simplicity" has for more than a century been the main timber supporting the platform of the party he founded. His forty years of distinguished public service were marked by such an entire absence of ostentation as to be felt as a rebuke by many of his associates. But his sincerity in this attitude was never questioned.

Yet Jefferson was the last man in whom such characteristics might have been expected. In birth, fortune, intellect and physique he essentially was an aristocrat. Born in Albemarle County, Virginia, April 2, 1743, the son of a well-to-do planter, his family and associations were of the leisure class, identical with the country gentry of England. His father's land was tilled by slaves. Until he was twenty his time was employed in acquiring a gentleman's education in England and in William and Mary College; and in riding, hunting and social pleasures. His superior mind easily gave him rank as a scholar in the languages, mathematics and natural sciences. In person he was over six feet in height, slenderly built but very erect. His features were delicately fashioned, his eyes a bright hazel-brown, his hair a sandy red and waving, his complexion clear and bright. He had an air of distinction but a manner of extreme simplicity that gave him popularity among all classes. He seemed designed by nature for public service. Inheriting his father's plantation, with an assured income sufficient for a gentleman's needs, his practice of the law was unusual for a man of his class. His talents secured him a place in the office of George Wythe of Williamsburg, then at the head of the Virginian bar. Jefferson's success was immediate. In the fourth year of his practice he appeared in nearly 500 cases. In 1774 he had added to his estate until he owned 5,000 acres of tobacco-land. In 1772 he added to his fortune by his marriage to Mrs. Martha Skelton for whom he built the splendid mansion of Monticello, which for half a century was the most distinguished center of private hospitality in America. Much of his land remained uncultivated, however, for he was opposed to the institution of slavery. He would buy no new slaves, and tried to have a law passed by which he could free those he had.



THOMAS JEFFERSON

From the time Jefferson was 25 years old until the opening of the Revolution he was a member of the House of Burgesses, and thus was officially connected with all the events which led up to the war. His writing of the pamphlet, *A Summary View of the Rights of America*, placed him among the leaders of the Revolutionary party. In the first continental congress he was appointed on a committee with Adams, Franklin, Sherman and Livingston to draft the Declaration of Independence. The document, as written by Jefferson, was a transcript of his famous pamphlet issued two years before. It was destined to dismember an empire, found a new nation on new principles of liberty and equality, and furnish a model for numerous nations that were to assert their right to self-government.

The years of the Revolution he devoted mainly to governing Virginia, declining more conspicuous office, and to working out a practicable form of republican government. Most of his ideas found place in the Constitution. After the war he returned to Congress. He secured the adoption of our system of coinage and the prohibition of slavery north of the Ohio River. He succeeded Franklin as Minister to France, returning in 1789 to become secretary of state in Washington's first cabinet. Here the beginnings were made in the formation of two great political parties — the Democratic (first called Republican) with Jefferson as the leader, the Whig (originally the Federalist) with Alexander Hamilton. The former stood for states rights, the latter for a strong centralized Federal government — issues that dominated the country until they were fought out in the Civil War. Jefferson's ideas prevailed in the election of 1800 when he was chosen president. "Jeffersonian simplicity" came in on inauguration-day when the new executive rode to the capital on horseback, unattended, dressed in plain cloth, and tied his horse to a fence-post. Court etiquette was abolished and titles of honor dispensed with. "His excellency" was plain Mr. Jefferson.

Jefferson's administrations (1801–9) were marked by constructive work. He stopped the preying of Algerian pirates on commerce; negotiated the purchase of Louisiana and followed it with the Lewis and Clarke expedition to the Pacific; maintained, without war, the rights of neutrals on the high seas; prosecuted his own vice-president, Aaron Burr, for suspected treasonable projects in the southwest. He reduced the public debt, fortified our seaports, diminished public taxes, and refused a third term. On March 4, 1809, he retired to private life, after forty years of continuous public service. Madison and Monroe, who succeeded him for sixteen years, were his political pupils and personal friends and, before he died, July 4, 1826, he was assured of the coming leadership of a forceful disciple from the west — Andrew Jackson.

To the last day of his life he was the most distinguished man in America — "the sage of Monticello." His hospitality was so large and free that his estate was literally eaten up, and he died poor. He passed away on the fiftieth anniversary of the signing of the Declaration, and was buried in the heart of a forest on the estate. A plain granite shaft which marks the spot is inscribed: "Thomas Jefferson, author of the Declaration of Independence." See *Memoir* by T. J. Randolph, Jefferson's son-in-law, and James Parton's *Life*.

Jeff'ersonville, Ind., a city on the Ohio River opposite Louisville, Ky., with which it is connected by two iron railroad bridges each nearly a mile in length. The falls of the river are utilized in the various manufactories, which include railroad workshops, large carworks, foundries, machine shops, flourmills, etc. There also are boat-yards, and hydraulic cement is manufactured in the vicinity. One of the state prisons is here, as are the Indiana State Reformatory and also the U. S. quartermaster's supply depot. Population 10,412.

Jef'freys, George, Lord, an English lawyer, who rose to a high position on the bench but disgraced the profession and made his name forever infamous by his cruelties and brutal disposition, was born at Acton, England, in 1648. He was the son of a squire of small means, who contrived to give his son a good education. Among his earliest trials were those of Titus Oates and Richard Baxter, and in both he displayed his brutal and vindictive nature. In 1685 he was sent to the west to try those who took part in Monmouth's unsuccessful rebellion. Three hundred and twenty were hanged as rebels during the trial, which was called the Bloody Assize; 840 were transported; and a still larger number were whipped, imprisoned and treated with the most brutal cruelty. He was appointed lord-chancellor by James II, and made a peer with the title of Baron Jeffreys of Wem. When James II was driven from the throne and kingdom, he tried to follow his master, disguised as a sailor, but was caught and shut up in the Tower of London, to save him from being torn to pieces by the mob. Here, worn out by hard drinking, he died on April 18, 1689. See *Life* by Woolrych.

Jehu (*jē'hū*), the eleventh king of Israel, reigned between 883 and 855 B. C. He was reckless and violent in character. The house of Ahab fell by his hand, and the heathen priests were executed, thus sweeping the kingdom clean of idolatry and establishing Jehovah's worship. But his reign was unprosperous. See *Second Kings: 9* and *10*.

Jel'lyfish, the name given to free swimming hydrozoa (*q. v.*). They are common at the seacoast and are often seen from the decks of vessels, Some forms look like mushrooms, others have more the form of an umbrella or saucer with something suspended underneath. They formerly were called medusæ and acalephæ. The body is composed of a clear jelly-like substance, often highly colored in parts during the breeding-season. When taken from the water, they soon dry and shrivel in shreds. The bell-shaped swimming discs vary in curvature from that of a thimble to that of a saucer. The animal swims by the contraction of the swimming bell — the water contained inside being thrown out through a circular opening in the membrane. Tentacles and long contractile lines hang suspended from the disc. Jellyfish are provided with numerous thread-cells or nettle-cells, from which thread-like darts can be discharged, and some larger forms can inflict very severe stings by means of these darts. See Romanes' *Jellyfish, Starfish and Sea Urchins.*

Jena (*yä'nȧ*), **Battle of.** This name is applied to two engagements fought on the same day, Oct. 14, 1806 — one at Auerstadt, 14 miles north, between 30,000 French under Davoust and 48,000 Prussians under the duke of Brunswick; the other on the heights around Jena between 70,000 Prussians under the prince of Hohenlohe and 90,000 French under Napoleon. In both the Prussians were badly defeated, leaving the fatherland at the mercy of Napoleon.

Jena (*yä'nȧ*) **University** was founded about 1547 at Jena, in the grandduchy of Saxe-Weimar, by John Frederic of Saxony. It soon acquired a high reputation as a seat of learning. It is the university of the smaller Saxon states, and is supported by taxes from all. The library is large, numbering 200,000 volumes. The university has graduated many men who have become famous professors in other institutions of learning. In its schools of law, medicine and theology there have been many distinguished names. There are 112 professors and 1,362 students.

Jen'ner, Edward, the discoverer of vaccination, was born at Berkeley, England, May 17, 1749. He went to London in his 21st year and studied under the celebrated John Hunter. The discovery which has made Jenner famous was the result of a long series of experiments. His attention was attracted to the nature of cowpox by a young woman who had remarked: "I cannot take the smallpox, for I have had the cowpox." Many investigations delayed the discovery for 16 years, when, at length, the final experiment was made on May 14, 1796, on James Phipps, who was vaccinated with perfect success. The practice met with great opposition at first; but finally honors were showered upon Jenner, and he was elected a member of all the learned societies of Europe. He died of apoplexy at Berkeley on Jan. 26, 1823. See his *Life and Correspondence* by Dr. J. Baron.

Jephthah (*jef'thä*), one of the "judges" (B. C. 1336-1037) of the Israelites. He led in the war against the Ammonites, defeated them with great slaughter, and was chosen ruler in reward. He vowed that whoever came to him out of his house should be sacrificed to Jehovah. His own daughter met him and "he did with her according to his vow." The story is much like that of Iphigenia in Greek mythology, and both are grouped together by Tennyson in his poem *The Dream of Fair Women.* See *Judges 11* and *12.*

Jeremi'ah the prophet, son of Hilkiah the priest, was a native of Anathoth, in the territory of Benjamin. While still young he received a call to be a prophet (B. C. 627-6), and lived as a prophet, mainly in Jerusalem, for at least 40 years. Jeremiah had been a prophet five years when the lost book of the law was found and an important reformation began under Josiah. The prophet was in sympathy with this reformation, and most of his prophetic teaching had reference to it. Jehoiakim had not been long on the throne before Jeremiah began to foretell the doom of Judah. He was the first of the writing prophets and the first to declare that religion is an individual and personal relation between the soul and God. Jeremiah is believed to have met a martyr's death about B. C. 585 at Tahpanes the border-city of Egypt, but rabbinical tradition says that he escaped when Nebuchadrezzar conquered Egypt. See Cheyne's *Jeremiah* and the Bible-book of the same name.

Jer'icho, once one of the most flourishing cities of Palestine, was situated northeast from Jerusalem a journey of six hours. Westward from Jericho lies a waste tract of limestone mountains; but the town stands on a well-watered and fruitful plain, yielding dates, raisins, balsam and honey. The capture of Jericho by the Israelities on their first entrance into Canaan, is recorded in *Joshua 6.* Herod the Great resided at Jericho, and erected many beautiful buildings. It was destroyed in the reign of Vespasian, and rebuilt under Hadrian. In the time of the crusades it was captured, and at last completely destroyed. At the present time its place is occupied by a miserable village, called Riha or Ariha, with barely 200 inhabitants.

Jero'me, William Travers, was born in New York City in 1863, of wealthy parents, and was educated at Amherst College and Columbia Law School, from which he graduated in 1884. He was appointed assistant district-attorney, under Tammany rule, but turned against that organization, assisted in the famous Lexow investigation, which revealed the corrupt condition of the New York police, and was appointed justice of the court of special sessions New York City. He was elected district attorney in 1901, and showed courage and determination in the prosecution of gamblers and of other criminals. In 1905 he was again elected district attorney, running independently, after both parties had refused to nominate him. Charged with failure to prosecute certain accused corporation-managers, he was vindicated by official investigation.

Jerome (*jĕ-rōm′* or *jĕr′ōm*), **Saint,** was born at Stridon, on the borders of Dalmatia and Pannonia, sometime between 341 and 345 A. D. His parents were Christians. His early education was under the care of his father, and he afterward studied at Rome. In 386 he retired to Bethlehem, and was followed by many persons who wished to be taught by one so learned and pious as he had become during years of service in the church. Here were founded four convents, one for monks and three for nuns. Jerome himself presided over the former. It was in this sacred retreat that he completed the writings which have made him so famous. His revision of the Latin New Testament and translation of the Old Testament were wonderful achievments, and originated churchly Latin. He died at Bethlehem on Sept. 30, 420. His works consist mainly of Scripture commentaries and theological treatiases. He was the supreme scholar of the ancient church. See *Jerome* by E. L. Cutts, in The Fathers for English Readers.

Jer′sey City, the second largest city in New Jersey and county-seat of Hudson County, is on the west bank of the Hudson opposite New York, of which, though in another state, it is an extension, and with which and with Brooklyn it is connected by ferries and tunnels. Its site forms the part of a peninsula bounded by Hackensack River and Newark Bay, and on the southeast it extends along New York Bay. Jersey City is a busy city. It is the terminus of nine great, and as many local, railroads, and is connected with Easton, Pa., by canal; and at its wharves many ocean-steamers receive and discharge their freight. It is the mart of a large trade, especially in iron, coal and agricultural produce. Its own manufactures are on a large scale, and include sugar, flour, iron and steel, zinc, boilers, machinery, locomotives, oils, chemicals, oakum, lumber, silk, watches, jewelry, lead-pencils, rubber goods, tobacco, pottery, soap and perfumes. The city has large stockyards and grain elevators, notable for size and efficiency. Here is St. Peter's (Roman Catholic) College, founded in 1878. The excellent public schools give commercial, industrial, and arts courses, offer summer school work and evening classes. It also possesses a number of fine churches. The site was formerly called Paulus Hoek, but became a city in 1820 under the name "City of Jersey." It received its present name in 1838. Population, 350,000, a gain of over 80,000 in a decade. In 1850 it had fewer than 7,000 inhabitants. This remarkable growth was partly brought about in 1871 by consolidation with the neighboring municipalities of Hudson City, Greenville and Bergen. This was laid out by Peter Stuyvesant in 1660, and consequently Jersey City contains the oldest school-site in the state. School 11 is the fifth building on the original site.

Jeru′salem, the " Holy City " of the Jews, stands 2,364 to 2,582 feet above the sea, on the spurs of two hills, surrounded and divided by two valleys, once deep, now partly or wholly filled with rubbish. Both hills were strong natural fortresses. The weakness of the place for defense lay in its poor supply of water. The city was known under its name Jerusalem at least 500 years before David captured it (*c.* 1045 B. C.). The conquest of the city by the Israelites proved incomplete; before the time of the Judges it again was the "City of the Stranger." When at last won by David, the Lower City was joined to the fortress of the Upper Hill, and the whole surrounded by a wall.

The history of Jerusalem covers 3,500 years. Of these, 500 years lie back of reliable history. Of the other 3,000 years, less than 500 show us Jerusalem independent. For 600 years longer the city was in the hands of the Israelites, but never wholly independent. Jerusalem, the "city of peace," sustained 17 sieges. Twice it was entirely destroyed, its buildings being torn to the ground There is no city in the world whose soil has so often been drenched with the blood of its people. From B. C. 536 to A. D. 70 Jerusalem was torn to pieces by factions, and came into possession of Persians, Macedonians, Syrians, Egyptians and Romans. The city was besieged, taken and razed to the ground by Titus in 70 A. D.

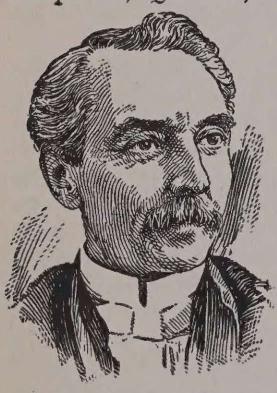
Its after history may be divided into five periods. The first comprises early centuries when the land was covered with Christian monasteries, churches and hermitages. The persians in 614 captured the city and destroyed the churches. Then the Moslems appeared in 637 and the gates were thrown open without a blow. The second period includes the rule of the Moslems (637–1099). The third period is that of the crusaders (1099–1244). After 87 years of continuous war Jerusalem was lost, and the crusaders never retook it. The fourth period is that of Turkish rule beginning in 1244. The fifth began with the capture of the city by the British forces under General Allenby, Dec. 10, 1917.

The main buildings and monuments for which the explorer has to look are the first, second and third walls of the great temple; the royal towers; the Tyropoeon Bridge; Baris or Antonia; Ophel; the tombs of the kings and certain pools. It would be strange, if much would be left of the city of Herod, to say nothing of the city of Solomon. There is, however, more than might have been expected — more in proportion than is left of old Rome — far more than is left of Tyre, Carthage or Corinth. Excavations have been made by the English, Russians, French and Germans. The old tombs of the kings, part of David's first wall, the area which was the site of the temple and the Pool of Bethesda are certainly known, and the sites of many other features of the old city are probably known. However, scholars are not agreed as to the site of the Holy Sepulchre, which has long been a vexed question.

The present city, which is the chief center of Palestine, has a population of over 80,000 of whom half are Jews, a quarter Moslems and the rest Christians. Of late years it has grown outside its walls, the windowless, one-storied houses stretching on every side. There are banks, hotels and a railroad to Joppa. See Warren and Conder's *Jerusalem* and Besant and Palmer's *Jerusalem, the City of Herod and Saladin.*

Jet, a mineral of a perfectly black color, capable of being easily cut and carved and taking a very beautiful polish. It was first found in Asia Minor. In Great Britain it is obtained chiefly at Whitby in Yorkshire. Very large quantities are found in France, where it gives employment to many of the people of Aude. It is made into rosary beads, crosses and other ornaments. As a material for mourning jewelry it is especially valuable, and for that purpose is largely used. Imitations of jet are made from hardened india-rubber, called vulcanite or ebonite, and from glass.

Jette, Sir Louis A., was born at L'Assomption, Quebec, in 1836, and was called to the bar in 1857. He for some time was a journalist; was elected to the House of Commons for Montreal East in 1872; and was appointed judge of the Superior Court in 1878. He became professor of civil law at Laval and subsequently dean of the faculty. In 1903 he was appointed one of the Alaskan boundary commissioners. In 1898 he was appointed lieutenant-governor of Quebec.



SIR LOUIS A. JETTE

Jet'ty, an embankment or pier extending into the water, built of earth, stone and wood. Jetties are built in rivers and harbors to increase the depth of the water by narrowing the channel and thus increasing the scouring action of the current. Jetties are particularly valuable where a river empties into a sea which is more or less tideless, as the Danube into the Black Sea and the Mississippi into the Gulf of Mexico. In these cases the river is continually bringing down sediment, and this is deposited at the mouth, forming a delta. There is little or no scouring action due to the flow and ebb of the tide. The jetties at the mouth of the Danube were commenced in 1858, completed in 1861, and improved in 1868. The depth of water was increased from 9½ feet to 22 feet. The Mississippi jetties put in by James B. Eads in 1875–9 are notable among modern engineering achievements. They are embankments made by sinking mattresses of interwoven osiers and covering these with stones and concrete. These embankments prolonged a channel 1,000 feet in width for 2¼ miles seaward. The depth was increased from 8 feet to 30 feet by the scour of the river. As the deposit accumulates, it will be necessary to prolong the jetties seaward in order to scour away the fresh deposits. There are many smaller harbors and rivers in the United States which have been deepened and made safer by building jetties.

Jew'ett, Sarah Orne, an American author, was born at South Berwick, Me., Sept. 3, 1849, and was educated at Berwick Academy. She wrote many short stories and a number of novels, and was quite successful in the portrayal of rural and provincial life. Among her novels are *Deephaven, Old Friends and New, A Marsh Island, The King of Folly Island, The Life of Nancy* and *The Tory Lover.* She died June 24, 1909

Jew'ish Lit'erature. See LITERATURE.

Jews, the name given since the exile in Babylon to the descendants of Abraham, who, about 2000 B. C., emigrated from east of the Euphrates to Canaan or Palestine. Their first name was Hebrews. Jacob settled with his family in Goshen, Egypt. Here the Hebrews remained 430 years. At first they were well-treated, but a new dynasty reduced them to cruel slavery. Moses led them from Egypt about 1320 B. C. The wandering in the wilderness of the Sinaitic peninsula seems to have lasted 40 years, the chief event of which was the giving of the law to the people through Moses. The "land of promise" became theirs under Joshua about 1274 B. C. Yet not all the natives were driven out, or even conquered, till long afterward. The fine grazing-lands east of the Jordan were given to Reuben, Gad and the half-tribe of Manasseh; while the land west of the Jordan was parceled out to Judah, Simeon, Dan, Benjamin, Ephraim (the second half-tribe of Manasseh), Issachar, Zebulon, Naphtali and Asher. Levi received no province, but, instead, 48 cities and a tenth of the fruits of the field, and were allowed to settle wherever they chose.

After the death of Joshua (about 1254 B. C.), the bond between the tribes became loosened; each attended to its own affairs. and soon the tribes were singly conquered by the surrounding peoples. At this time arose brave men and women, known as "judges," who freed the nation. This period is called the heroic age of Hebrew history. The greatest of 15 judges named were Deborah, Gideon, Jephthah, the herculean Samson and Samuel. The first king was Saul the Benjamite (1067–55 B. C.), a warrior but not a statesman. He was succeeded by David his son-in-law (1055–15), the greatest king that ever sat on Israel's throne. His reign and that of Solomon, his famous son, were the golden age of the Jews. The kingdom stretched as far as the Euphrates and the Red Sea. Jerusalem was captured and made the capital, and then was built the great temple. Trade was carried on with Phœnicia, Arabia, Egypt, India, Ceylon and, perhaps, Sumatra and Java. But the enormous expense of Solomon's court beggared the nation, and his reign (1015–977) in many ways was a splendid failure. Jealousy against the supremacy of Judah (975 B. C.) caused a split into two nations, Judah under Rehoboam and Israel under Jeroboam. The first was made up of Judah and Benjamin, the latter of the other ten tribes. After 19 kings of different dynasties had reigned, the country was conquered by Shalmaneser, king of Assyria, and the mass of the people were carried away captive (720 B. C.) to Media. What became of them has never been more than guessed at. Their place was taken by Assyrian colonists, and these, mingling and intermarrying with such Israelites as were left, formed the mixed people called the Samaritans. Among the 20 kings of the house of David who ruled over Judah, Jehoshaphat, Uzziah, Hezekiah and Josiah were able rulers and zealous for the worship of Jehovah. Other kings were more or less unfaithful to the religion of their fathers. Unable to withstand the Egyptians, Assyrians and Babylonians, to each they in turn became tributary. At last, in 588 B. C., Nebuchadrezzar stormed Jerusalem and carried the richest of the people to Babylon. The exile lasted 70 years, if reckoned from 606, but only 50 years from the destruction of the city in 588, the exile ending when Cyrus the Medo-Persian captured Babylon in 538. Ezra the priest headed a second migration (*c.* B. C. 458) to Palestine in the reign of Artaxerxes I, and 13 years later came Nehemiah, under whom the walls of Jerusalem were rebuilt.

The people of Jerusalem submitted to Alexander the Great in 332 B. C. Ptolemy Soter, king of Egypt, took Jerusalem in 301 B. C., and carried off 100,000 of the people, whom he settled mainly at Alexandria and at Cyrene. They soon spread over the whole country from Libya to Ethiopia. They had equal rights with the Egyptians, and became noted for their learning, making the famous Greek translation of the Old Testament, known as the Septuagint. Egypt ruled Palestine for one hundred years; then it fell into the hands of Syria, one of whose rulers, Antiochus, "the madman," outraged the feelings of the Jews by making the temple a temple of Jupiter and forcing the people daily to sacrifice swine. The heroic family of Mattathias, the priest, rose in rebellion, and under his successors, the Maccabees, the Syrians were driven out, and the national council, the Sanhedrin, set up (145 B. C.). This Maccabean war of independence is Israel's second heroic age. But a dispute over the throne between Hyrcanus II and Aristobulus brought in the Romans, and Jerusalem was captured by Pompey in 63 B. C. With Hyrcanus II ended the Hasmonean dynasty of the Maccabees. Through Cæsar, Antipater the Idumean was made procurator of Judæa. Antipater was poisoned, but his brother, Herod, became procurator over Galilee and Judæa, entering Jerusalem in triumph in 37 B. C. After Herod's death in 4 B. C. (the probable birthyear of Jesus) Judæa and Samaria were ruled for a time by his son, Archelaus, but he became hateful to the people, and was banished by Augustus emperor of Rome. Judæa was now made one province with Syria, and ruled by Roman governors. In 38 A. D. the emperor, Caligula, ordered that he should be worshiped by all his subjects. Everywhere the Jews refused to obey, and at Alexandria there was a frightful massacre. Herod's grandson, Herod Agrippa, was given power over Palestine by Claudius, and obtained for the Jews the rights of Roman citizens in 41 A. D. Roman governors succeeded him, under whom robbers and assassins overran the country; Jews and Samaritans waylaid and killed each other; and hatred of the Roman soldiery grew fiercer among the people. Finally the party of zealots, also called the assassins, rose in a rebellion in 66 A. D., which was ended, after a horrible massacre, by the conquest of Jerusalem by Titus (A. D. 70), the destruction of the temple and the killing or banishment of hundreds of thousands of the Jews, who were scattered throughout the world.

Since this dispersion of the nation its history has been a succession of cruel persecutions and massacres, with, at intervals, brief periods of good treatment, when some king or prince needed their services. Between the destruction of Jerusalem and modern times the Jews rose highest, and are seen at their best, under the Moors in Spain. In England the Jews did not gain most of their rights till the 19th century. They were not admitted to parliament till 1858, and no Jews sat in the house of lords till 1885. Jews were made French citizens by Napoleon in 1806. In Denmark the same right was given them in 1814. Norway forbade them to touch her soil till 1860. In Russia they have been forced to crowd into one district, known as the Pale, and have even been ordered out of that and out of the country (1892), a persecution which, coupled with famine and cholera, is not surpassed in horror by any in the dark ages. The Jews were given their full rights in Russia in 1848, though the feeling against them has never died out. They, of course, enjoy the fullest liberty in the United States. The Jews are distributed as follows: Russia, 3,400,000: Austro-Hungary, 1,700,000: United States, 1,777,185: Turkey, 60,000: Germany, 590,000; Rumania, 400,000; Morocco, 150,000; Great Britain, 100,000; Abyssinia, 120 000; Netherlands, 83,000; France, 49,000; Tripoli, 60,000; Tunis, 45,000; Algiers, 57,132; Italy, 38,000; Persia, 35,000; Egypt, 25,200; Bulgaria, 33,717; Turkestan and Afghanistan, 14,000; Switzerland, 8,069; the Transvaal, 10,000; Argentina, 6,735; Servia, 4,652; Denmark, 4,080; Belgium, 3,000; Greece, 5,000; Spain, 5,000; Sweden and Norway, 2,000; with scattered numbers in other parts of the world, making a total of 11,585,202.

Joachim (*yō'ä-kēm*), **Joseph,** a celebrated Hungarian violinist and composer. He was born at Kitsee, Hungary, June 28, 1831. He played the violin at the age of five years, and was later taught by Szervacsinsky at Budapest. Later he was the pupil of Boehm, and still later he went to the Conservatorium at Leipsic under the direction of Mendelssohn. Here he studied under David until 1849, when he became leader of the orchestra at Weimar. In 1854 he was appointed conductor of concerts and solo violinist to the king of Hannover. In 1868 he was given charge of the musical school in the Academy of Arts at Berlin. Joachim was recognized as a master of technique. Of his compositions the most notable was his Hungarian Concert, op. II.

Joan of Arc (*jōn* or *jō-an* of *ärk*) or in the French form *Jeanne d'Arc* (*zhän d'ärk*), the Maid of Orleans, the daughter of humble parents, was born at Domremy, France, Jan. 6, 1412. She was taught, like other young women of her station, to sew and spin, but not to read and write. She was more modest and pious than her companions, and, when about 13, she believed that she saw a flash of light and heard a heavenly voice bidding her be diligent in her religious and holy duties. When 15, she imagined that the heavenly voice bade her go and fight for the dauphin of France. She went and persuaded him of the truth of her heavenly mission. She put on male dress and warlike equipments, and, with sword and banner, put herself at the head of the French troops, whom her example and the knowledge of her heavenly mission inspired with new confidence. From April 29 to May 8, 1429, the army under her leadership gained many victories over the English at Orleans. The national courage was kindled by these successes, and Joan became the heroine of France and the dread of the English forces who had been routed by her. She conducted the young prince to Rheims, where he was crowned on July 17, 1429, and Joan, whose bravery made this possible, saluted her king with tears of joy. She wished now to return home, thinking her mission ended, but Charles persuaded her to remain with the army, and she at last consented. In a battle with the Burgundian forces in Compiègne the French troops were defeated, and Joan was taken prisoner and sold to the English for a sum equivalent to $3,200. At Rouen, the headquarters of the English, she was tried before the bishop of Beauvais as a sorceress and witch, and after a long, shameful and unjust trial she was condemned to be burned at the stake. She suffered this terrible fate on May 30, 1431. "We are lost," said an English soldier; "we have burned a saint!" In 1456 her trial was declared unjust, and Joan, a heroine and martyr, has since had an honored and unique place in history. See *Lives* by Michelet, Parr, Tuckey and S. L. Clemens.

Job, the hero of the book named after him. He is said to have lived in Uz, somewhere between Palestine and the Euphrates. The belief of most scholars at present is, that the book is a dramatic poem and that Job is not a real person, but simply the main character in this poem, as Hamlet is in one of Shakespeare's plays. No one is now able to determine the authorship of the book. As a work of genius and art it has the first rank in Hebrew literature, and abounds in sublime thought. It shows a man, who through suffering and trial, remains true to his trust in the wisdom of Providence. The book was, perhaps, written during the exile. It is ranked with *Hamlet* and *Faust* as the three greatest poems of their class. See Davidson's *Job* and Froude's *Short Studies on Great Subjects.*

Joffre, Joseph Jacques Cesaire, General, Field-Marshal of France and Commander of the French at the Battle of the Marne, was born in 1852 at Rivesaltes, France. As a young man of eighteen he took part in the defense of Paris; in 1865 he was sent as captain of engineers to Indo-China and in 1892 to Africa where he assisted in the siege and capture of Timbuctoo, was made lieutenant-colonel and received the ribbon of the Legion of Honor. In 1911, he was made commander-in-chief of the French armies and in spite of difficulties succeeded in bringing them to such a state of efficiency that when the rapid advance of the Germans seemed to make the fall of Paris inevitable Joffre, after retreating day after day until he reached the Marne, gave battle and won one of the most important victories in the history of warfare. General Joffre was a member of the commission sent by the Allies to the United States in 1917, and was everywhere received with the greatest enthusiasm.

Johan'nesburg, a town in Transvaal, South Africa, and the chief point in the Witwatersrand gold-fields. The town has had a remarkable growth. It is 35 miles south of Pretoria, the capital. Railroads connect it with Delagoa Bay, Durban, Port Elizabeth and Cape Town. The population recently numbered 237,220, consisting of (120,411) whites, (116,809) colored, aboriginal natives and other colored races. The town is well equipped with churches, banks and mercantile houses. Dust-storms are a feature, and fevers sometimes are epidemic. With the outbreak of the Boer War Johannesburg temporarily lost its British population, which hurriedly withdrew. The city was occupied by Lord Roberts on May 31, 1900.

John, Eugenie. See MARLITT, E.

John surnamed Lackland, king of England (1199-1216), was the youngest of the five sons of Henry II, and was born at Oxford on Dec. 24, 1167. John joined his brothers in their rebellion against his father, and knowledge of this ungrateful act hastened Henry's death (1189). Richard I succeeded but died in 1199, choosing John as his successor. Arthur, the son of Geoffrey, was the rightful heir to the crown; but he was seized, imprisoned at Rouen, and soon put secretly to death. John proved an active king. He compelled William of Scotland to do him homage, put down a rebellion in Ireland, and subdued the independent prince of Wales. Not satisfied with these activities, he quarreled with the pope and confiscated the property of the church and clergy. The pope in return placed John's kingdom under an interdict, and in 1212 deposed the king and gave his subjects permission to revolt. John was compelled to submit to Rome and hold his kingdom as a dependent of the pope. The English barons were anxious to end the tyranny of John, and drew up a petition, which the king rejected. This was the signal for war. The army assembled at Stamford, and marched to London, led by the rebel barons. They met the king at Runnymede, and on June 15, 1215, he was forced to sign the Great Charter (*Magna Charta*), the basis of the English constitution. The pope soon refused to sanction the new charter, and war again broke out. The barons called upon the dauphin of France to be their leader, and Louis landed at Sandwich on May 21, 1216. In attempting to cross the Wash, John lost his regalia and treasures; was taken sick; and died at Newark Castle on Oct. 19, 1216, in the 49th year of his age. See the histories by Pearson, Green and Stubbs, *The Early Plantagenets* in the Epochs of Modern History Series; and Norgate's *England under the Angevin Kings.*

John of Gaunt (Ghent), was the fourth son of Edward III, who made him duke of Lancaster. He was born in March, 1340, at Ghent. In the French wars he served with great bravery under Edward the Black Prince. In 1370 he married Constance, daughter of Peter the Cruel, king of Castile. On Peter's death John claimed the kingdom in the name of his wife, but the military expedition to obtain Castile proved unsuccessful. Toward the end of his father's reign he became the chief man in the kingdom, and perhaps wished to succeed him; at any rate, the young king, Richard II, distrusted him and sent him on another wild expedition after his Castilian kingdom. This resulted in a treaty between John and Henry of Trastamara, who had possession of the throne, by which John's daughter should succeed as queen of Castile. On the death of his second wife he married Catharine Swynford by whom he had three sons and a daughter. From the oldest child was descended Henry VII. John died at London on Feb. 3, 1399.

John II of Poland was the younger son of Sigismund III. Having embarked for Spain, to persuade Philip III to form a league against France, he was shipwrecked and imprisoned for two years at Vincennes. Being released on a promise by his brother, the king of Portugal, never to war against the king of France, he went to western Europe, became a Jesuit priest, and was made a cardinal by Innocent X. Returning to Poland, he became king after his step-brother Ladislaus in 1648. During his reign Poland was attacked by Russia and Sweden, the war ending victoriously for Poland and several provinces being added to her territory. John surrendered the crown in 1668, and retired to France, where he died on Dec. 16, 1672.

John III (So'bieski) of Poland and one of the greatest warriors of the 17th century, was born in 1624, and received the most careful education and training. When the Poles were defeated by the Russians in the battle of Pilawiecz, the Sobieskis took up arms to restore their country. Mark fell on the banks of the Bog; John so distinguished himself by his valor that he became the hero of his countrymen. He defeated the Turks in the great battle of Kotzim, in which they lost 28,000 men. On May 21, 1674, Sobieski was elected king of Poland, and was crowned at Cracow with his wife. When the Turks besieged Vienna in 1683, John hastened thither with 20,000 Poles, and, with the German allies, gained a great victory on Sept. 12. He died of apoplexy on June 17, 1696. Sobieski was not a statesman and warrior only but a lover of science and a man of gentle disposition and pleasant manner.

John I, João the Great, king of Portugal, the son of Peter I, was born at Lisbon in 1357. At the death of his brother in 1383 he became regent and in 1385 seized the throne from the rightful heir. A war followed with Spain, in which John was victor. In 1415 he took Ceuta from the Moors. His reign was one of prosperity to Portugal. He died in 1433.

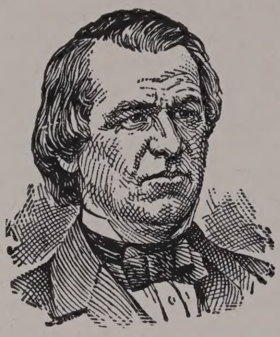
John II, João the Perfect, king of Portugal, was born at Lisbon in 1455. At the age of twenty-six he succeeded his father, Alphonso V, and was crowned on August 29, 1481. His reign is historically important, because of the voyages of discovery sent out by him under Diaz, who discovered the Cape of Good Hope, and Da Gama, who visited India. Other navigators explored the African coasts. He died in 1495.

John, Saint, the apostle and evangelist, was the son of Zebedee, a fisherman of Galilee. He was born at Bethsaida, and, until called by Jesus to be a disciple, followed his father's occupation. He and his elder brother James were known as the "Sons of Thunder," a name given them by Jesus. The events of his life from this time to the ascension of Christ are to be learned from the *Gospels.* Besides *Revelation* he is held to be the author of the *Gospel* and the three *Epistles* which bear his name.

Johns Hopkins University, an institution of higher learning situated at Baltimore, Maryland, was founded by Johns Hopkins, one of the wealthy citizens of that city. He contributed $7,000,000 for that purpose. In connection with the institution the famous Johns Hopkins Hospital must be considered, since the two institutions, while under separate management, have a strong bond of union in the medical school of the University. The University was incorporated in 1867 and opened in 1889; students were received at the medical school in 1893. Johns Hopkins is preëminently a graduate school, providing facilities for advanced work in philosophical and scientific studies in which it ranks with the leading universities of Europe. An undergraduate department has been in existence since the opening of the institution, and a department of engineering was established in 1912. College courses are given in the afternoons and on Saturday mornings to teachers and others whose engagements prevent attendance at regularly scheduled hours, and courses of secondary, collegiate, and graduate grades are given in a six-weeks' summer session. In February, 1930, the Walter Hines Page School of International Relations was inaugurated here. In 1933, the enrollment was 2,226 and the faculty numbered 603.

See Baltimore.

Johnson, Andrew, the seventeenth president of the United States, was born at Raleigh, North Carolina, on December 29, 1808. When Andrew was four years of age, his father was drowned. He left his family little material aid so that Andrew was apprenticed to a tailor at an early age. He served as an apprentice for seven years, never being able to attend school. In 1825 he emigrated to Tennessee with his mother, where he settled at Greenville. Here he worked at his trade about a year and then married Eliza McCardle. His wife who had been privileged to enjoy a more extensive education than Johnson, became his teacher in writing and arithmetic. At this time he could read, but his knowledge went no farther. Johnson was a natural political leader. In 1830, when Greenville became a city, he was elected mayor, an office he held for three years. In 1835 he was elected to the State legislature, and in 1841 as a member of the senate. In 1843 he was elected to Congress, where for ten years he worked for the interests of the Democratic party. He was twice chosen Governor of Tennessee, and in 1857 he was elected United States Senator. Here he opposed all disunion schemes, and during the Civil War was the leader of the Southern Union men. In 1862 he was appointed war Governor of Tennessee. In this capacity he served so efficiently that the Republican party nominated him for Vice-Presidency of the United States, and he was elected to that office with Lincoln in 1864. On April 14, 1865, after the assassination of President Lincoln, Johnson became President. His administration is memorable because of the contest waged by him with Congress, although both were elected by the Republican party. Johnson's policy toward the South was held to be too lenient by Congress, which passed what are known as the "reconstruction measures" over his veto. There was a great strain of ill feeling. President Johnson was accused of disloyalty and his removal of Secretary Stanton from the Department of War precipitated the crisis. Charged with violation of the Tenure of Office act, the President was impeached and brought to trial before the Senate, but was acquitted. His last official act consisted in proclaiming complete pardon to all those concerned in secession. Johnson was elected United States Senator in 1875. He died in Tennessee on July 31, of that year.


Andrew Johnson

Johnson, Eastman, a distinguished American artist, was born at Lovell, Maine, on July 29, 1824. At an early age he revealed unusual talent as an artist, and soon earned enough to pay for a course of study in Europe. He remained abroad for six years. He then returned to the United States and settled in New York in 1856. His most famous paintings are *Old Kentucky Home; The Boyhood of Abraham*

Lincoln; Milton Dictating to his Daughters, and *The Wounded Drummer Boy.* His work has been among the best known and most popular of any American artist. Among his many portraits are those of Webster, Hawthorne, Longfellow, John D. Rockefeller, Cornelius and William H. Vanderbilt, and Presidents Cleveland and Harrison. He died on April 6, 1906.

Johnson, Emory Richard, an American economist, was born in Waupun, Wisconsin, in 1864. He was graduated from the Universities of Pennsylvania and Wisconsin, and became instructor in economics at Harvard College from 1893 to 1896, and assistant professor from 1896 to 1902. In 1902 he became professor of transportation and commerce at the University of Pennsylvania. In 1919 he became dean of the Wharton School of Finance and Commerce. Johnson served from 1899 to 1904 as a member of the United States Isthmian Canal Commission, and has been employed as an expert in many transportation problems, both state and national. He edited the Annals of the American Academy of Political and Social Science from 1901 to 1914, and has published many works on transportation, waterways, and Commerce.

Johnson, Hiram Warren, a noted American statesman and lawyer, was born at Sacramento, California, in 1866. He began the study of law in his father's office, and was admitted to the bar in 1887. He practised law in Sacramento until 1906 when he won public acclaim due to his participation in the San Francisco graft prosecutions. He succeeded in securing the conviction of Abe Reuf and his associates and his fame spread rapidly. It was his record in the practice of law which the Progressives used as a basis in nominating him as a candidate for the governorship of the State of California. He was elected by a majority of more than 22,000 votes and served as Governor of the State from 1911-15. In 1915 he was re-elected to that office for a four-year term. His administration as Governor was marked by a progressive spirit and the achievement of many needed reforms in State affairs. Approximately twenty-three amendments to the State Constitution were passed through the legislature during his term of office. In 1917, however, Governor Johnson was elected to the United States Senate and resigned from the office of Governor in that year. He has been repeatedly re-elected to the Senate since 1917. In 1920, Senator Johnson was an important candidate for the Republican nomination for the Presidency of the United States.

Johnson, Hugh S., General, a prominent American industrialist, soldier and lawyer, was born at Fort Scott, Kansas, on August 5, 1882. He was educated at Northwestern Normal School, and was graduated from the United States Military Academy at West Point in 1903. In 1906, after the San Francisco fire, Johnson was placed in charge of supplies for refugees in the stricken area. In 1911 he was Superintendent of Sequoia National Park. In 1915 he obtained his A. B. degree from the University of California. A short time later the young soldier was promoted to the rank of Brigadier-General. In 1916, acting in the capacity of Judge Advocate, he accompanied General Pershing on the Punitive Expedition into Mexico. During the World War, General Johnson was in charge of purchases and supplies for the Army General Staff from August, 1918, to the close of the war. He also served as a member of the War Industries Board (1918). He was Commander of Camp Fremont and Camp Lee. It was during the trying days of the war that General Johnson originated, drafted and managed the Selective Draft Act of 1917-18 which drafted every physically fit young man in the country into active war service.

After the close of the war, General Johnson resigned from the military service to act in the capacity of vice-president, counsel and general manager of the Moline Plow Company, a position he occupied for ten years (1919-29). In 1927 he became associated with Bernard M. Baruch of New York City. General Johnson's career as soldier, lawyer and business man is a most interesting record, one in which important tasks have been well performed and great achievements won. It was this outstanding record of the stalwart and "fighting" American, that led President Roosevelt to choose General Johnson as Administrator of the National Industrial Recovery Act in June, 1933. In this new official capacity, General Hugh S. Johnson assumed the responsibility of putting millions of idle men back to work, restoring wages, destroying the evils of unfair competition, and avoiding those of restraint of trade. The task was stupendous, but General Johnson had proved by his former achievements that no job was too difficult for him to perform. For more than a year he worked to reorganize American industry and to avert strikes and violent outbreaks among industrial workers by compromise and plans of peace, not, however, without growing criticism and antagonism toward his NRA activities. In September, 1934, General Johnson submitted his resignation to President Roosevelt, pledging his loyalty to the President, but expressing the belief that in view of the reorganization which the NRA was undergoing, his position was superfluous. President Roosevelt accepted his resignation with great praise for his accomplishments in "the social and business structures" of the country. Thus ended a "one-man" control of the NRA, and its reorganization under three boards with legislative, executive and judicial control soon followed.

See NATIONAL INDUSTRIAL RECOVERY ACT.

Johnson, Reverdy, an American jurist, was born at Annapolis, Maryland, on May 21, 1796. He studied law, and was admitted to the bar in 1815. He won wide fame as a profound lawyer, and frequently argued cases before the supreme court of the United States. He was elected to the senate in 1845, where he served four years. He was attorney-general in President Taylor's cabinet. He again became senator in 1862, and in 1868 was appointed minister to England. He died in Maryland in 1876.

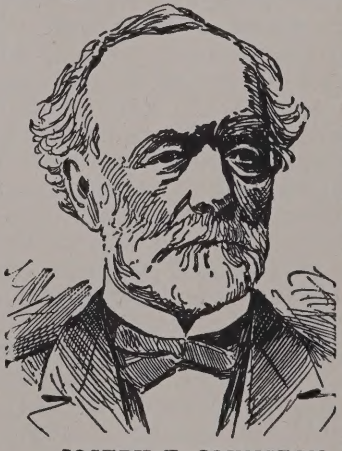
Johnson, Richard Mentor, vice-president of the United States, was born in Kentucky in 1780. He was a state legislator; then a member of Congress from 1807 to 1837, ten years out of the thirty being a senator. In the War of 1812 he did good service on the Canadian frontier. In the battle of the Thames he was badly wounded, but is said to have killed the celebrated Tecumseh. In 1836 he was elected vice-president. He died at Frankfort, Ky., Nov. 19, 1850. He was distinguished for gentleness of manners and kindness of nature.

John'son, Dr. Samuel, was born at Lichfield, England, on Sept. 18, 1709. He received his early education in his native town and from his father's library. In 1729 he went to Pembroke College, Oxford. Here Johnson spent the unhappiest period of his life. He was oppressed by debt and other difficulties, which prevented him from taking his degree. After teaching school, which he greatly disliked and in which he was a failure, he began to translate for the press; and when his affairs were at their worst he married. In 1737, with a tragedy and twopence half-penny in his pocket, he came to London. His struggle for a living is touching. Sometimes dinnerless and bedless, always ill-fed and shabbily dressed, he never whined about his hardships, and there is no braver figure in English literature. Meanwhile he was slowly becoming the foremost writer of the day. In 1738 appeared his poem of *London*. From 1747 to 1755 he worked on his famous *Dictionary*. When the huge undertaking was nearly done, a nobleman whose help at an earlier time had been refused to Johnson wished to patronize the writer and his work. To this Johnson replied in the famous letter of Feb. 7, 1755, which perhaps is the finest piece of indignant writing on record. About this time came out his *Vanity of Human Wishes* and *The Rambler*. In 1759 was published *Rasselas*. A pension of $1,500 a year enabled him to spend his last twenty-two years in comfort. He gathered at his house a queer company of homeless friends, besides providing a night's lodging to many waifs and strays and often putting pennies into the hands of street Arabs asleep on the pavement, that they might wake up and find that they had wherewith to buy a breakfast. In 1781 appeared his *Lives of the Poets*, perhaps his most enduring work. He died at London on Dec. 13, 1784. See Boswell's *Life of Johnson*. See the *Essay* by Macaulay, that by Carlyle and Leslie Stephens' *Johnson* in the English Men of Letters Series.

Johnson, Sir William, was born at Warrentown, Ireland, in 1715. At 23 he was sent to America to manage the estates of his uncle. His business brought him into contact with the Mohawk Indians, whose language he learned, and who made him an honorary chieftain of their tribe. Johnson received his baronetcy during the French and Indian Wars. His services to the British cause were so highly esteemed that the king presented him with 100,000 acres in New York. Here was planted a settlement, named Johnstown for him, in Tyrone County; and here he died on July 11, 1774. See his *Life* by W. L. Stone.

John'ston, Albert Sidney, was born in Kentucky, Feb. 3, 1803, and was educated at West Point, where he graduated in 1826. He fought in the Black Hawk War, and later emigrated to Texas, where he was made commander of its forces. In 1838 he was appointed secretary of war in Texas. During the Mexican War Johnston was inspector-general on the staff of Gen. W. O. Butler. At the outbreak of the Civil War he was brigadier-general in the department of the Pacific, but in May, 1861, entered the Confederate service as general, with a command in the west. With 50,000 men he attacked General Grant on April 6, 1862, at Shiloh, where was fought a notable battle. General Johnston was killed by a rifle-ball on the first day of the engagement. He was one of the bravest and ablest of the Confederate generals. See the *Life* by his son.

Johnston, Joseph Eggleston, an American general, was born in Virginia, Feb. 3, 1807. His mother was a niece of Patrick Henry. He graduated at West Point in 1829, fought in the Seminole War and served with great bravery in the war with Mexico. In 1861 he entered the Confederate service, and was appointed brigadier-general, with command of the army of the Shenandoah. He came to the help of Beauregard at the first battle of Bull Run. In 1862 he was disabled for months by a wound received at Seven Pines, while opposing McClellan. In 1863 he tried to relieve Vicksburg, but failed, as his command was too weak. He commanded the force sent to oppose Sherman's march on Atlanta in 1864, and stubbornly resisted the latter's progress, but was stead-



JOSEPH E. JOHNSTON

ily driven back, and was relieved of his command. In February, 1865, Lee placed him again in command, with orders to "drive back Sherman." But Sherman's force was four times as great, and, after hearing of Lee's surrender, he surrendered his own force on April 26. He was elected to Congress in 1877. He received the appointment of United States commissioner of railroads from President Cleveland, and retained this office until his death at Washington, D. C., on March 21, 1891. He was an able general and a man of wide culture and ability. See his *Narrative of Military Operations.*

Johnston, Richard Malcolm, an American writer, was born at Powellton, Ga., on March 8, 1822, and was educated at Mercer University. He studied law, and was admitted to the bar. Later he was called to the chair of literature at the University of Georgia, which he held until the outbreak of the Civil War. He then opened a boys' school, near Sparta, Ga., which he removed to Baltimore, Md., in 1867. It was not until after this date that he appeared as a writer of short stories and novels, which gave him wide popularity. In 1871 he published *Dukesborough Tales,* a series of southern stories and character sketches then new and charming in style and humor. Among other works are a *History of English Literature,* written in collaboration with W. H. Brown; *Life of Alex. H. Stephens; Studies, Literary and Social; Old Times in Middle Georgia;* and *Pearse Amerson's Will.* Judge Johnston died at Baltimore, Sept. 23, 1898.

Johnstown, N. Y., county-seat of Fulton County, is on the Fonda, Johnstown, Gloversville and Northville Railroad and on Cayadutta Creek, 40 miles northwest of Albany. It was founded in 1764 by Sir William Johnson, who erected Fort Johnson, a courthouse, a jail and an Episcopal church. To-day it possesses electric tramways and the other adjuncts of a modern town. Its chief industry is that of the manufacture of gloves and knitted goods, but the gelatin, lumber, gristmill and machineshop products are noteworthy. Population 10,447.

Johnstown, Penn., a city on Conemaugh River, by rail fifty-eight miles southeast of Pittsburg Manufacturing of various kinds is extensively carried on, steel-making being the most important industry. The plant of the Cambria Steel Company is one of the best equipped establishments of the kind in America. There also are the Lorain Steel Company, an iron and steel works, furniture factories, potteries, a wireworks and woolen and leather factories. Public buildings of note are Cambria Free Library, Conemaugh Valley Memorial Hospital, the city-hall, high school, Franciscan monastery and several churches.

Johnstown is famous as the scene of one of the greatest catastrophes of recent years. By the bursting of a reservoir on May 31, 1889, the city was overwhelmed with a flood. The water descended through a narrow valley and destroyed everything in its path. The loss of life is estimated at 2,500 or 3,000. An appeal for aid was generously responded to both at home and abroad, the cash contributions amounting to more than $4,000,000. Johnstown to-day is a much larger and finer city than before her misfortune, of which but few traces remain. The city occupies the hundredth place in America's large cities, its population being 80,000

Joliet (*jō′lĭ-ĕt*), a city in Will County, Ill., 36 miles from Chicago on Desplaines River, at the terminus of the Chicago Canal. The rapids give water-power estimated to be sufficient to run machinery to employ 50,000 men. Six railroads, the Illinois & Michigan Canal, and an interurban system connecting with lines in Wisconsin, Ohio, Indiana, Illinois and Missouri, furnish transportation. Pig-iron, steel, wire, nails, tinplate, boilers, stoves, agricultural implements, gasoline, automobiles, matches, horse-shoes and wall paper are manufactured there. Stone-quarrying is an important industry. The 24 school buildings are made of Joliet limestone. The high school building, which cost $225,000 is said to be the best equipped schoolhouse in the state and houses 2,000 pupils, a larger enrollment than any city of similar size in the United States possesses. Other notable buildings are the Illinois Steel Company Athenæum (a clubhouse for workingmen), two hospitals, two academies, a library, and a fine Union Depot. The northern state penitentiary is located there. Population, 39,000.

Joliet (*zhô-lyȃ′*), **Louis,** one of the early explorers of the Mississippi, was born at Quebec in 1645. He studied at the Jesuit College, Quebec, intending to become a priest. He, however, abandoned this intention, and spent some years as an Indian trader, thus getting a knowledge of the languages and geography of the west. With Marquette he was selected to explore the western country and push through to the Mississippi. They started in May, 1673, reaching the Mississippi at the mouth of the Wisconsin in June. They floated down the Mississippi, passing the mouths of the Missouri and the Ohio, and going far enough to be sure that the river flowed into the Gulf of Mexico. Joliet upset his canoe on his way back, losing all his maps and papers, so that the only accurate report of the expedition was Marquette's. Joliet was given the seigniory of Anticosti Island in 1680 and, later, that of Joliette. Few men have contributed more to the geography of that time than did Joliet. He died in 1700. See Parkman's *La Salle and the Discovery of the Great West.*

Joly (*zhō'lē*), **de Lotbinière Sir Henri Gustave,** a prominent Canadian statesman, was born at Epernay, France, in 1829. He was educated at Paris. He removed with his parents to Lower Canada where, in 1855 he was called to the bar. He became premier and commissioner of public works of Quebec in 1878. In 1867 he was elected by acclamation both to the Assembly and the Commons. He sat in both Houses until 1874, and remained in the Commons until 1885. He was appointed minister of Inland Revenue in 1896, in the Laurier Ministry, and later Lieutenant-Governor of British Columbia. He was considered an authority in all matters of forestry. He died in 1908.

Jones, Jesse Holman, a distinguished economist and builder, was born in Robertson County, Tennessee on April 5, 1874, the son of William Hasque and Anne Holman Jones. He was educated in the public schools and became interested in the study of finance at an early age. In 1895 he became manager and later general manager of M. T. Jones Lumber Company of Dallas, Texas. He organized the South Texas Lumber Company in 1902, and the Texas Trust Company in Houston in 1909. The latter is now known as the Bankers Mortgage Company of which he is chairman of the Board of Directors. Jones has been spurred on in his every activity by a boundless ambition which has enabled him to amass great wealth and become a brilliantly successful business man.

Jesse Jones is the owner and publisher of the Houston Chronicle. A great portion of his time and energy has been expended in the building and operating of a series of hotels and public buildings. He is the builder, owner, and operator of the Rice, Lamar and Texas State Hotels situated in Houston, Texas; of the Worth Hotel, Fort Worth; the Connellee Hotel, Eastland, Texas, and of many office, store and apartment buildings.

In 1917 he served as director-general of military relief of the American Red Cross War Council at Washington, D. C. In 1918 President Wilson appointed him a member of the Red Cross War Council. He was a delegate, together with Henry P. Davison, to the Red Cross meetings in Paris, Cannes, and Geneva. Jones assisted in organizing the League of Red Cross Societies of the World.

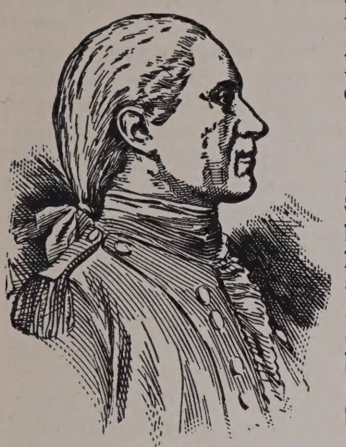
On December 15, 1920, he married Mary Gibbs of Houston, Texas. In 1925 he received the degree of LL.D. from Southwestern University and from Southern Methodist University in 1927. He was a member of the Democratic National Committee, occupying the position as director of finance in 1924, and chairman of the advisory committee in 1928. The burning ambition of Jesse Jones still urged him on towards greater success.

On January 22, 1932, one of the world's greatest financial corporations came into existence, the Reconstruction Finance Corporation. This organization replaced the National Credit Corporation, organized in 1931 by the bankers of the nation at the request of President Hoover to give emergency relief to small banking and other institutions for the betterment of business. Although the new Industrial Recovery Act under the guidance of General Johnson now enjoys much of the importance formerly held by the RFC, the corporation still has a vast sum of money to lend as well as having several billions of dollars out on loan to American railways, banks, and insurance companies. The chairman of that organization is Jesse Jones, the wealthy Texan who, since the inception of the Roosevelt administration has turned his ambitions toward the Cabinet position of Secretary of the Treasury. He is at present guiding the "convalesence of American industry." In January, 1934, a detailed report of the RFC was submitted to Congress. As Chairman of that agency, Jesse H. Jones petitioned Congress for additional appropriations to carry on the activities of the Corporation. Congress extended the life of the RFC to February 1, 1935, and appropriated $850,000,000 for its continued activities.

Jesse Jones was recently appointed director-general of the Texas Centennial Celebration of 1936. His home is in Houston, Texas.

Jonah, the son of Amittai and a Hebrew prophet, lived in the eighth century before Christ, during the reign of Jereboam II over Israel. He was a native of Gathhepher in Gallilee. The book of Jonah is attributed to him. The oracle in chapters fifteen and sixteen of Isaiah has also been attributed to him. The book of Jonah is a graphic story of the prophet. Its authorship is as much disputed as its contents, which some take literally, some as pure allegory. The book begins with the command of God to Jonah to go to Nineveh and prophesy against the wicked city. Jonah disobeyed, and for three days and three nights was imprisoned in the belly of a great whale. He prayed for deliverance, and in response was cast up on dry land, whereupon he hurried to Nineveh and delivered his message, "Yet forty days and Nineveh shall be overthrown." The king and the people of Nineveh repented, however, and the city was saved. Jonah was deeply chagrined that his prophesies were unfulfilled. He protested, and in consequence received the divine rebuke.

Jones, John Paul. In 1761 a sea-captain brought a sailing vessel with a cargo of Virginia tobacco into the harbor of Whitehaven, a seaport on the English shore of Solway Frith. One evening, with a crowd of spectators on the stone pier, he watched a boy bring in his fishing-boat in the teeth of a gale that had strewn the coast with wreckage. The little hero of the hour was John Paul, a Scotch lad born in 1747 who lived in the fishing-village of Kirkbean. Such good material for a sailor was not to be left behind, so, when the vessel made its next voyage, John Paul was on board, apprenticed for five years. On the Rappahannock River, Virginia, he saw his elder brother William, who had been adopted by a wealthy planter and distant relative and had taken his name of Jones. Then he sailed away again. At the age of seventeen he brought the vessel into Whitehaven after all the officers had died, and became captain. At the age of twenty-five, it is said, he knew as much of seamanship as any man in his majesty's navy. Besides, he was a handsome youth of courtly bearing. He had picked up French and Spanish in foreign ports, studied history, philosophy and polite literature, and cultivated the society of shipowners, planters and bankers. Three times he visited his brother on the Rappahannock, the last the brother dying time in 1773 to find and himself the heir to 3,000 acres of tobacco land.



John Paul Jones

Twenty-eight years old, rich, handsome, accomplished, he immediately put his estate into the hands of trustees and offered his services to Congress in the Revolutionary War. Before Christmas, 1775, John Paul Jones raised the pinetree-and-rattlesnake flag on the first American man-of-war. In 1778 he floated the stars and stripes from the *Ranger* and carried the news of Burgoyne's surrender to France. He sailed the western coast of England, destroyed the shipping at Whitehaven, and defeated the guardship *Drake* in the English Channel. Flushed with victory he asked Louis XVI of France for a naval vessel. He received one, and named it *Bon Homme Richard* in compliment to Franklin, then our minister to France. With this vessel he fought the famous battle with the *Serapis*. Lashing the two together, he boarded the enemy, cut loose and saw his own ship go to the bottom. He was made a chevalier of France and an admiral of the Russian navy. Congress voted him a gold medal. The reward seems trivial, but the young republic had no money, no navy, no way of honoring its seafighter or using his services. So he disposed of his Virginia estate, lived in Paris and died there in 1792. A week before he died he was offered the command of the navy of the French Republic. Gouverneur Morris, then United States minister to France, had his body placed in a lead coffin filled with alcohol and placed in the vault of the church of foreign Protestants, temporarily, so it could be brought home for burial. But three months later the days of the Terror began, and Jones' casket was hurried into an unmarked grave in the old cemetery of St. Louis. The ground was afterwards built over, and our hero lay under a solid block of buildings for more than a century. In 1905 the American ambassador, General Horace Porter, after a five years' search found the casket, and the body of our first naval hero was brought home in a man-of-war and buried at the naval academy, Annapolis. It has been proven, too, that he did not die in poverty and neglect, as has been charged to our country's discredit. He had a fortune of $50,000, well invested, that was inherited by Scotch relatives, and he was surrounded by devoted friends. Still young, ambitious and an ardent republican, he meant to help the French win their liberty, as they had helped us. The great Napoleon deplored the untimely end of this naval genius, and said that if Jones had lived France would have had an admiral worthy to meet Nelson at Trafalgar.

Jonesboro, a city and the seat of Craighead County, Arkansas, is situated on Crowley's Ridge in the northeastern part of the State, sixty-seven miles northwest of Memphis, Tennessee. The city is served by four railways, and is the terminus of the Lake City and Eastern Railroad. There is also excellent bus service for a radius of 500 miles, and a well-equipped municipal airport. There are a number of churches, and a fine system of public and parochial schools. The Jonesboro Baptist College is located here.

As the city is the intersection point of three important railroads, it is one of the largest jobbing centers in the State. There are seventy-five manufacturing establishments, with a yearly product amounting to $16,000,000. The chief industries include lumber, hardwood, baskets, golf shafts, veneering, flour mills, railroad shops, brick kilns, furniture, cotton compress, a handle factory, and a cotton oil mill. The population in 1930 was 10,326.

Jongleur (*zhôn-glûr′* or *jŏn′glẽr*), an itinerant minstrel in France and Norman England during the Middle Ages. These minstrels sang, recited poetry, and told stories, for hire. Usually the songs and verses were of their own composition. They formed a class entirely distinct from the knightly poets, the troubadours and trouvéres. Usually, the jongleurs were hired for special entertainments, as those occuring at the court. They travelled about over the countryside, securing engagements wherever they could and remaining as long as they were paid.

Jonson, Ben, an English dramatist, was born at Westminster (now in London) about 1573. He received his education at Westminster School, where he had as his teacher the celebrated William Camden. For a time he followed the profession of an actor, but soon became interested in the writing of dramas. The first that proved a success was *Every Man in His Humor,* in which Shakespeare acted one of the parts, in 1598. His *Masques* were written for the courts of James and Charles, and are elegant and graceful in style. He was one of the most learned men of his age and the influence of his writings proves the strength and the talent of the man. As a song-writer he had few equals. Toward the end of 1625 he was attacked by the palsy and afterward by dropsy. During the last three years of his life he was unable to leave his room. He died in August, 1637, and was buried in Westminster Abbey. The stone above his grave bears the inscription: "O rare Ben Jonson!" See A. C. Swinburne's *Study of Ben Jonson.*

Jop'lin, Mo., a city and railroad-center in Jasper County, southwestern Missouri, near Kansas and ten miles from Oklahoma. It lies 14 miles southwest of Carthage, and is intersected by seven railroads. Its mining industries are considerable, for it is the center of the lead and zinc region of southwestern Missouri, which is the richest mining camp (for those ores) in the world. It has smelting furnaces, foundries, machine-shops, flourmills, boilerworks, a soap factory and white lead works. It has banks, good schools and churches and fine public buildings. The population has grown greatly in the past decade, its present inhabitants numbering 45,000.

Jop'pa. See JAFFA.

Jor'dan, David Starr, naturalist and educator, formerly president, now chancellor of Leland Stanford University, was born at Gainesville, N. Y., Jan. 19, 1851, and graduated at Cornell University and at Indiana Medical College. From 1872 to 1879 he held chairs at various collegiate institutions, and from 1879 to 1885 was professor of zoology in and from 1885 to 1891 president of, Indiana University. He also acted as assistant to the United States fish-commission, and was United States commissioner in charge of the fur-seal investigations. In 1891 he was chosen president of the Leland Stanford University. He resigned the presidency in 1913, and was appointed chancellor. He is the author of *Invertebrate Animals of the Northern United States; Fishes of Northern and Middle America; Factors of Organic Evolution; Care and Culture of Men;* and numerous papers on ichthyology.

Jor'dan River, the chief river of Palestine, the bed of which forms a great valley stretching from north to south in the eastern part of the country. It is formed by the junction of three streams. The highest source is the Hasbany, which rises near the Druse town of Hasbeiya on the west side of Mt. Hermon. The Jordan flows south, and after a little over 100 miles, passing through the Waters of Merom and the Lake of Tiberias, 682 feet below the Mediterranean, it falls into the northern end of the Dead Sea, 1,292 feet below the ocean. Its banks are of white marl, at times steep, but there are more than 40 fords for crossing.

Jorullo (*hō-rōōl'yō*), a volcanic mountain in Mexico 4,315 feet above the sea, 150 miles west of the City of Mexico. During one night, Sept. 29, 1759, Jorullo was thrown up from a plain by the pressure of volcanic force.

Jo'seph, son of Jacob and his father's favorite. His envious brothers sold him into Egypt where his conduct and skill in reading dreams raised him to high favor with the Pharaoh and to the first place in the kingdom. The story is told in complete detail in *Genesis*.

Josephine (*jō'zē-fēn*), **Marie Rose**, empress of the French, was born on June 23, 1763, on Martinique. She had only a poor education, but her qualities of mind and heart, even more than her beauty, won universal regard. In 1779 she was married to Viscount Beauharnais. Josephine's husband was executed during the reign of terror, she herself barely escaping. On March 9, 1796, she was married to Napoleon Bonaparte. She accompanied him on his Italian campaign, and used her influence in restraining him from measures of violence and cruelty. But as she had no children by Napoleon, her marriage was dissolved by law on Dec. 16, 1809. The empress lived near Eoreux and died at Malmaison, May 29, 1814. See the *Memoirs of Madame Rémusat.*

Jose'phus, Flavius (JOSEPH BEN MATTHIAS), a Jewish writer and historian, was born at Jerusalem in 37 A. D. of a distinguished family, and was thoroughly educated. He finally entered the sect of the Pharisees. In 63 A. D. he was sent to Rome on a political mission, and, being successful, became a man of consideration among his countrymen. During the Jewish insurrection he was in command of affairs in Galilee. When he finally fell into the hands of the Romans, he saved his life by acute flattery, predicting the rise of Vespasian to the imperial throne. The latter half of his life was passed as a resident of Rome in learned leisure. Not all of his writings have come to us, but we have a history of the Jewish wars from 170 B. C. to the destruction of Jerusalem; a history of the Jews from the creation to 66 A. D.: an autobiography; and a work against Apion. The date of his death is not known, but probably he died about 95 A. D.

Josh'ua, the son of Nun of the tribe of Ephraim, is first mentioned in *Exodus xvii: 9*, as commanding Israel at the battle of Rephidim. He was sent out as one of the 12 spies from Kadesh to get information about the strength of the Canaanites. When the others returned disheartened, he and Caleb alone retained their courage. These two, therefore, out of all the grown men of Israel, were exempted from the divine sentence that because of their want of faith they should fall in the wilderness. After the death of Moses Joshua became the leader of Israel, and the book that bears his name tells of his conquest and the settlement of Canaan.

Josi'ah, king of Judah from B. C. 638 to 609 entered upon his reign at the age of eight. He grew up an earnest, religious reformer, and purged Judah and Jerusalem from idolatry. Josiah was the last of the "good" kings. He was killed at the battle of Megiddo in the valley of Esdraelon, while trying to check the advance of Pharaoh-Necho against the Assyrians. The prophets of his reign were Jeremiah and Zephaniah.

Jötunheim (*yẽ'tŭn-hīm'*). The ancient Scandinavians believed that besides Odin and the gods there lived giants of the frost, of the mountains etc., who had their separate home and feasting hall, Jötunheim. These giants after all were the forces of nature; hence, when Thor visits Jötunheim and would contend with them, he is easily worsted; for not even a god can shatter the earth, consume like fire, race with thought or wrestle with time and age. The giants lived before the gods; but some day they and the gods together would perish to make way for a happier earth.

Jötuns (*yẽ'tuns*), divinities in Scandinavian mythology, which personified various elements of evil. Their stature and strength were gigantic, but their intelligence was inferior to that of human beings.

Joubert (*you'bĕrt*), **Petrus Jacobus,** a Boer general, was born at Congo, Cape Colony, in 1833. He was state-attorney for Transvaal in 1867, and was prominent in affairs long before events gave his name to the world in later times. In his military career he first distinguished himself by the defeat of Gen. Sir George Colley at Majuba Hill in 1881. In 1896 he was prominent in causing the surrender of Dr. Jameson, following the latter's famous raid that year. In the later war with England General Joubert became known as an able tactician in the kind of warfare practiced by the Boers. He was in command of the force that besieged Ladysmith, and repulsed General Buller at Chieveley. He died of disease at Pretoria, March 27, 1900.

Joule (*jo͞ol*), **James Prescott,** a distinguished English physicist, born at Salford, Dec. 24, 1818, died at his country place near Manchester, Oct. 11, 1889. He was a brewer by trade, as were his father and grandfather before him; but having become interested in chemical and physical problems through the instruction of Dalton, his father provided him with a private laboratory. His most important work includes (1) an accurate study of the heating effect of an electric current (See *Joule's Laws*, "Electricity"); (2) a study of the changes in the dimensions of a body which accompany its magnetization; (3) accurate determinations of the mechanical equivalent of heat, employing various methods and showing the equivalence of energy of various forms; (4) an elaborate study of the subject of thermometry; and (5) the discovery of the exact laws according to which gases expand when they do no external work, a research of fundamental importance in establishing the absolute scale of temperatures. See Joule's *Scientific Papers.*

Jour'nalism, the art of making newspapers, is becoming very important with the rapid growth of the newspaper. The daily paper, which must be in every man's hand in the early morning hours or ready for his evening's rest, is the product of more than a hundred brains. The editor-in-chief decides the political policy; his staff is composed of a number of subeditors or editors of departments — the city editor, the foreign editor, the telegraph editor, the financial editor, the agricultural editor etc. The city editor, next to the chief editor, is the most important. He has a large staff of reporters who gather the news of the day in the city where the paper is published. The managing editor on a large paper often is not the same person as the chief editor, but is the business manager. The night editor puts the paper to press — if it is a morning paper—decides all questions as to type, surplus matter, "boiling down" or condensing communications, not hesitating to cut down the work of all the other editors. The advertisements he cannot alter or throw out, as they have been paid for, and the reading matter must take what space is left. Reporters hold the lowest position on the literary staff. They usually begin work without a salary, and are paid only for what they write. Their work is hard — often dangerous and exciting. They must keep ahead of rival journals in gathering the news, and often have many disagreeable experiences and even hair-breadth escapes in their frantic rush for the latest information. As they show their fitness they are raised to the grade of special correspondents, sent to the legislatures and congress, European cities and seats of war. Nearly all large newspapers have offices in London and Paris, and by taking advantage of the five hours' difference of time the news of the morning papers of Europe can be gathered and sent to the morning papers in the United States. The subeditors are usually taken from the reporters and special correspondents. Journalism has become a distinct profession, and there are schools of journalism and chairs of journalism in some colleges. See NEWSPAPERS.

Juan Fernandez (*hŏŏ-ān' fĕr-nän'dĕth*), a rocky island in the Pacific off the coast of Chile, to which it belongs. It is 13 miles long and four broad, and is covered for the most part with high, rocky peaks, the highest of which is about 3,000 feet above sea-level. There are many fertile valleys which yield oats, apples, strawberries, peaches, figs and melons. Here Alexander Selkirk, a pirate, lived alone for four years

His story is supposed to have suggested Defoe's *Robinson Crusoe*. The island was discovered in 1583 by a Spaniard whose name it bears. There is a small Swiss colony.

Juarez (*hōō-ä'räs*), **Benito,** a president of the Mexican republic, was born in Oaxaca of Indian parents in 1806. He became governor of his native state and an active member of the Liberal party. When Santa Anna was dictator, he was exiled, but returned to Mexico when the republic was restored. In 1858, when the Liberal president was overthrown, Juarez was president of the supreme court, which is equivalent to vice-president. He at once took the government into his own hands, but was forced to fall back to Vera Cruz, where his government was recognized by the United States in 1859. In 1861 he was able to enter the capital, and was chosen president for four years. In the same year the allied forces of England, France and Spain occupied Vera Cruz. But the French alone remained and declared war against Juarez. Maximilian's brief reign came to an end in 1867, when he was shot by order of court-martial, and Juarez once more entered Mexico and was chosen president for a second term. In 1871 he was re-elected. Risings and rebellions were almost endless, but he faced all his foes with the dogged courage of his race, and was still triumphant when he died on July 18, 1872. The present prosperity of Mexico is in large measure due to Benito Juarez.

Ju'dah was the fourth son of Jacob and founder of the greatest and most populous of the twelve tribes, to which belonged the royal house of David. For history of the tribe see JEWS.

Ju'das, the betrayer of Jesus and named Iscariot, probably was a native of Kerioth in Judah and, if so, the only southerner among the twelve disciples. See the *Gospels*, the *Lives* of Jesus by Neander, Farrar and Edersheim and the essay by De Quincey.

Jud'son, Adoniram, one of the earliest American missionaries, was born at Malden, Mass., Aug. 9, 1788. He, with Mills, Newell and Nott, applied to the Congregational association of Massachusetts for aid in carrying the Gospel to the heathen. This resulted in the formation of the American Board, and in 1812 Judson sailed for India. It was nearly a year before the missionaries were allowed to begin work in Burma, preaching, writing and translating. In 1833 he completed the translation of the Bible, and followed it by the publication of the Burmese dictionary. He made two visits to the United States, being received with great enthusiasm by the churches. His union with the Baptist denomination, soon after reaching Burma, was the occasion of the origin of the American Baptist Missionary union. Judson died at sea, on his way to Mauritius in search of health, on April 12, 1850. See *Life* by Wayland, that by Judson and *History of the Burmese Mission* by Mrs. Judson.

Ju'dy. See PUNCH.

Juggernaut (*jŭg'ẽr-nąt*), a sacred town of India, containing the temple of the Hindu god Juggernaut, whose name means Lord of the World. The god is first mentioned in 318 B. C. The grounds include 120 temples, the chief one having a tower 192 feet in height. There are 24 festivals annually held in his honor. The great festival is when the god is dragged on his car, 45 feet high and 35 feet square, with 16 wheels, each seven feet in diameter. It was thought formerly that the worshipers threw themselves under the chariot wheels as a sacrifice to the god, but probably the deaths occurred from accident. The word has come to represent that which marches on, riding over everything.

Jugo=Slavia. A State formed from the southern or Jugo-Slav lands of the Austro-Hungarian empire, following the World War (*q. v.*). The 12,000,000 inhabitants are Serbs, Croats and Slovenes and occupy a territory of about the size of California.

Jul'ian, called the Apostate, because of his giving up Christianity. Born at Constantinople in 331 and half-brother of Constantine the Great, he became Roman emperor from 361 to 363 A. D. His boyhood was embittered by a terrible tragedy. He was bred a Christian, studied philosophy and literature, and at Athens embraced paganism. About 355 he showed himself a good soldier. He overthrew the Alamanni, conquered the Frankish tribes along the Rhine and made his winter-quarters at Paris. The people liked him because he lightened their burdens: the soldiers, because of his courage, success in war and simple private life. In 360 Emperor Constantine became alarmed at his popularity, and ordered him to send some of his best troops against the Persians. His soldiers rose and proclaimed him emperor. His cousin's death opened the government of the world to Julian. He reformed the civil service, persecuted neither Christians nor Jews, but reopened the old temples and tried (with poor success) to bring back the old religion. In 363 he marched against Persia, but was wounded. An old writer asserts that he cried: "Thou hast conquered, O Galilean!" which, whether he said it or not, was the fact. He died June 26, 363. See G. H. Rendall's *The Emperor Julian;* Ibsen's *Emperor and Galilean;* and Gibbon's *Rome.*

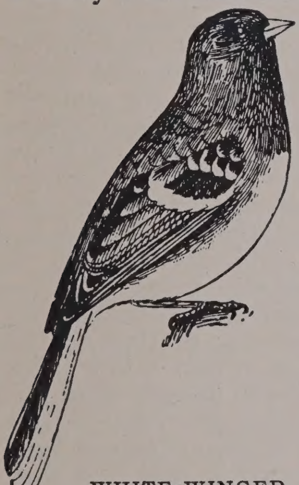
Jul'ius, the name of three popes.

Jul'ius II, a nephew of Sixtus IV, was born at Albezuola, Italy, in 1443. He became pope in 1503. His whole career was given to reëstablishing the papal power over the territory it had once had and to driving foreign rule out of Italy. To force Venice to give up the old papal provinces on the Adriatic, Julius entered the League of Cambrai with Germany, Spain and Louis XII of France. On the submission of Venice, he at once, fearing Louis's designs, entered the Holy League with England and Spain against France. Ranke describes him as "a noble soul, full of lofty plans for the glory and weal of Italy." He died on Feb. 21, 1513.

July, the seventh month in the year in our calendar, the fifth in the Roman calendar, where it was called *Quintilis* (the fifth). At first it had 36 days, then 31, then 30, and was restored to 31 by Julius Cæsar, in honor of whom it was named July. The July revolution is that of France in July, 1830, by which Charles X was set aside and Louis Philippe became king.

Jump′ing Mouse, a small field and forest-mouse of North America, having very long hind legs and capable of jumping eight to fifteen feet at a single bound. The body and head together are about three inches long, and the tail, while variable, is often five inches in length. The hind-legs and manner of using them always remind one of a kangaroo. In color it is reddish-brown above and white below. It feeds on seeds and grain, is nocturnal in its habits, and is only rarely seen in the daytime.

Jun′co a member of the finch family and a hardy little bird unafraid of winter's cold, is sometimes known as the slate-colored snowbird. It belongs to the woods of the north. Naturally shy, it is not infrequently emboldened to join the chickadees and sparrows in accepting man's hospitality, offered when deep snow makes lean pickings for feathered folks. In winter it feeds chiefly on weed-seeds and grain. It is about the size of the English sparrow, a small, trim bird robed in neatest Quaker uniform; its coat dark slate-color, a blackish hood fitted snugly about the head, then a slate colored breastplate; under part dull white, and white on the outer tail feathers. When disturbed, juncoes twitter and fly away, sometimes uttering what Chapman describes as a "sharp, kissing call." During the nesting-season a simple trill or low, sweet warble is heard.



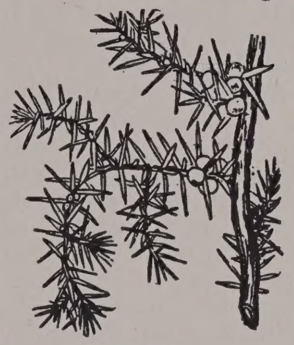
WHITE-WINGED JUNCO

June, the sixth month of the year in our calendar and the fourth among the Romans. It first had 26 days, to which four were added by Romulus, one was taken away by Numa, and the month again lengthened to 30 days by Julius Cæsar.

Juneau (*jū′ nō*), the capital of Alaska, is a town of 2,000 to 3,000 people, situated in the southern district, near Douglas Island. It is the center of a large import and export trade. Besides gold, furs are the chief article of export. A submarine cable now connects Juneau with the United States. The town has a few manufactures, the most important being its ironworks.

Jungfrau (*yo͝ong′frou*), meaning the maiden, a magnificent peak of the Bernese Alps, reaches a height of 13,671 feet. It obtains its name probably from the purity and dazzling brightness of the snow which covers it. Its summit was first reached by two Swiss, named Meyer, in 1811. A railroad is built from Lauterbrunnen to its summit.

Ju′niper, species of *Juniperus*, a genus of conifers, containing about thirty species widely distributed throughout the northern hemisphere. The junipers are characterized by their opposite or whorled leaves, and are peculiar among conifers in that the cone ripens into a berry-like fruit. The most common species of the north-eastern states are the common juniper (*J. communis*), which occurs either as a small tree or shrub or as a prostrate form; the savin (*J. Sabina*), which is a prostrate or sometimes creeping shrub throughout the northern regions; and the cedar (*J. Virginiana*), which is common on dry hills or in deep swamps and has a shreddy bark and a red, aromatic, hard wood.



JUNIPER

Junius, Letters of, seventy letters of political character, which appeared in the *Public Advertiser* of London between January, 1769, and January, 1772. For publishing the letter to the king, Woodfall, the proprietor of the *Public Advertiser*, was prosecuted, but was acquitted on a legal point; but a bookseller was punished for selling a reprint. These letters attracted the widest attention, because of their unknown author's boldness and his seeming familiarity with politics and well-known persons. It certainly was bold in that day to say, as Junius said to George III: "Remember that while the crown was acquired by one revolution, it may be lost by another." A dozen or more leading writers and politicians were suspected of hiding under the name of Junius. But the man most commonly held to be the writer is Sir Philip Francis, and this theory was adopted by De Quincey, Macaulay, Stanhope and other critics; yet there is no direct evidence connecting Francis with the authorship. The *Letters of Junius* were more polished than those of any writer of the day. They were the first of modern newspaper editorials. See Dilke's *Papers of the Critic.*

Juno (*jū'nô*). The Romans gave a god to everything existing—to a man, to the tree, to the state, to the storeroom. So Juno is the goddess of womanhood, and the various titles given her are of the different parts of a woman's life, as Juno the goddess of birth, of marriage etc. This personification of feminine functions became identified with the Greek goddess, Hera, who became known to the Romans through Greece at an early time. In this way Juno came to be considered the jealous wife of Jupiter, as represented in Vergil, as Hera (*q. v.*) is the spouse of Zeus in Homer.

Junot (*zhû'nô'*), **Andoche, Duc d' Abrantes,** one of Napoleon's famous generals, was born at Bussy-le-Grand, France, Oct. 23, 1771. He entered the army as a volunteer in 1792. His courage at Toulon caught the eye of Napoleon who carried him with him to Egypt as adjutant. At Nazareth he put 10,000 Turks to flight with but 300 horsemen. He was made governor of Paris, ambassador to Portugal and, in 1807, given command of the army for the invasion of that country. In a short time he had possession of all the strong places in the kingdom. For his brilliant success he was made Duc d'Abrantes and governor of Portugal. But he was soon defeated by Wellington (then Sir Arthur Wellesley) at Vimiera, and forced out of Portugal. He afterward served in Germany and Russia, and was made one of the scapegoats for the Russian disaster and sent to govern Illyria. This disgrace, together with former wounds in the head, brought on insanity. He died on July 29, 1813.

Ju'piter. See Planets.

Jupiter, the chief god of the Romans. He was first the divinity of the sky, of thunder and of lightning. He was the supreme spirit above other gods, and as such was besought to give victory in war. He also was the god of the vintage and of oaths. When, however, the Romans came to know of the Greek gods, the myths and stories told of Zeus were applied by Latin poets to Jupiter. Statues of Jupiter came to be made, and the Roman god came to be, as Zeus was, merely a greater man. The famous temple of Jupiter stood on the Capitoline hill at Rome, and was built by Tarquin.

Ju'ra, a range of mountains extending from the angle formed by the Rhône and the Aar northeastward for over 450 miles. By Jura, however, is usually meant only the part along the frontiers of France and Switzerland. The highest peak is Reculet, 5,643 feet in height. The eastern slope is much steeper than the western one. The ranges are broken by many cross-gorges. Limestone caves are numerous, and abound in magnificent stalactites and in bones of extinct animals. Some good-sized rivers sink into the ground and reappear after some distance. The Jura Mountains are of a peculiar limestone formation, which geologists call jurassic.

Jury, Trial by, is a form of trial of very ancient origin, in which a body of sworn men, generally 12 in number, are called upon to judge of the truth of the facts of a civil or criminal case. In England, even under the Saxons, it was the custom for 12 thanes to be chosen to prosecute malefactors in the county court. But this was rather like a grand jury, such as still meets in England to judge whether a prosecution is justified. It would seem that trial by jury in criminal cases only gradually came to supplant the curious practice of trial by ordeal. A jury has nothing to do with the sentence conferred, but only with the judgment of the facts submitted in evidence and summed up for them by the judge.

A jury is summoned by a writ, the jurymen being taken by chance from among such citizens as are eligible for the office. The final selection of 12 is made by lot under the direction of the presiding officer. As the clerk of the court calls the names, the jurors take their seats, but it is permitted that the prosecutor and defendant or their counsel may challenge undesirable jurors, who then are excluded and their places filled. The prosecutor or plaintiff or his lawyer addresses the jury and brings forth his witnesses. These witnesses are cross-examined by the other side; which then presents its case and its witnesses. All this procedure and the final summing up by the judge are addressed chiefly to the jury, which is the sole judge of questions of fact. The chief objections to trial by jury are the difficulty in getting all the jurors to agree, without which result there can be no verdict, and the danger of prejudice on the part of some of the jurors. The latter defect may be disregarded, or perhaps it is less to be feared in case of a jury of 12 than of a single judge. The jury may be locked up until they agree, or until the judge decides that an agreement is not likely to be reached. In the case of a disagreement a new trial may be ordered. Probably trial by jury is much more suitable for criminal than for civil cases, in the later of which one has to decide by probabilities rather than rely, as in criminal cases, upon proof positive.

Justin'ian I, nephew of Emperor Justin, was born in Illyricum in 482 or 483 A. D. Although slave-born, he shared in his uncle's success, and was given a good education at Constantinople. He was made a consul in 521. In 527 Justin proclaimed him his partner in the empire, and died four months afterward. His reign of 38 years is the most brilliant in the history of the later empire. Under the direction of the famous generals whom he chose, the famous Narses, Belisarius and others, the Roman empire was widened to its old limits and east and west united. Justinian, however, is most famous as a lawgiver. As soon as he gained the throne, the constitutions or imperial statutes were gathered and reduced to a code. But these statutes were but a small part of the law. The bulk of it — what we would call the common law — was contained in the writings of the jurists or law commentators. Of these writings there were many hundred volumes; but, owing to want of agreement between the writers, the law was very uncertain. Hence the famous Tribonian, with four associates, was instructed to prepare a single treatise which should cover the whole ground. This great work was accomplished in four years, and was published in fifty volumes, known as the *Digest*. On the same day — Dec. 31, 534 — Tribonian brought out a law-treatise, which Justinian caused to be prepared as a textbook for students. It is known to all modern lawyers as Justinian's *Institutes*. Justinian also bettered the condition of the slaves, taking away from their masters the power of putting them to death. He was an able ruler, and his intentions in the main were just and upright. He died on Nov. 14, 565. See his *Life* by G. Body.

Jute is the fiber taken from the bark of two plants, both of the lime-tree order, with yellow flowers. The larger plant is from five to 14 feet high, and is grown in central and eastern Bengal; the other, slightly smaller, is grown around Calcutta. The fiber is separated from the stem by steeping in water, which takes from two days to three weeks. The best kinds are pale yellow or buff, with a silky luster, easily spun and strong. Jute is used in making ropes, gunny bags, carpets, curtains, table-covers and other fabrics. Jute can be raised and manufactured cheaply, but is not so strong or so lasting as flax. Fabrics made of jute are easily rotted by damp, and cannot be often washed and dried, like linen and cotton, without injuring them; but there is fraudulent mixing of jute with cotton, flax, silk and woolen fabrics. India is the great jute-producing country. The United States yearly import millions of dollars worth of jute and jute-goods. Jute thrives in our gulf states. but production here has not been successful.

Jut'land, the only peninsula of any size in Europe which points directly north, has since early in the 10th century belonged to Denmark. It extends along the North Sea, northward to the Skager Rack, which separates it from Norway, and is flanked on the east by the Cattegat, which separates it from Sweden. It covers an area of 9,904 square miles. Here the Jutes lived in the fifth century, who took part in the Anglo-Saxon descents on the English coast. Population 1,124,694.

Ju'venal, Roman satirist, was born about 55 A. D. in the Volscian country where his father, a free Roman citizen, owned an estate. He was educated at Rome, and became the friend of Martial and Quintilian. Probably under Titus or early in Domitian's reign he served as tribune in the army, and in his native town of Aquinum he filled the office of censor and held other important posts. An inscription tells us that he was in Britain, and he is also known to have visited upper Egypt. All of his writings that are left are 16 satires; but these are of great value in themselves as literature and as pictures of Roman life under the empire. Perhaps the finest are the first five satires, written when the author was fresh from a living experience of Domitian's brutalizing government. The most popular now probably is the tenth, *The Vanity of Human Wishes*, which was imitated by Dr. Samuel Johnson. Juvenal used satire, not as a branch of comedy, which it was to Horace, the other great Roman satirist, but as an engine for attacking the tyranny, crimes and follies of his time. He died in 140 A. D.

Juvenile Courts. These are the latest means by which we are trying to distinguish between the young offender against the law and the hardened criminal, and in general to fight the great increase of crime which seems to exist among the young, especially in the larger cities of the world. Although for centuries children under seven have not been counted responsible for any criminal act they might commit, children over that age were until comparatively recently tried in the same courts and on the same general principles as those applied to adults. It was felt that this tended to make criminals out of young people who at heart were not vicious. Therefore for many years there have been reformatories to which the younger prisoners were sent, instead of to jail. But it became clear that to send a boy to a reformatory put a brand on him for life. Merely to be tried in open court with adults and hardened prisoners was to put a blot on the life of the child. Hence it has been the custom for many years in New York and in other states and in most European countries to suspend sentence on the young offender and to hand him over, where possible, to some responsible person, who would try to keep him at school or send him to work, according to his age, and would report to the judge how the boy (or girl) was getting on. The well-known George Junior-Republic was and is peopled for the most part by such probationers. But the juvenile-court law of the state of Illinois, passed in 1899, elevated this custom into a law and further required that in the cities of that state the children (boys under 16, girls under 17) should be tried in a separate court and with the purpose rather to reform than to punish. In 1903 Colorado passed a juvenile-court law which causes all under 21 to be regarded as children and includes this most important provision — that those adults, parents or employers or others, who are responsible for the child's "delinquency," are liable to fine and imprisonment. In 1905 this provision was included in the law of Illinois Since then New York and more than 20 other states, especially those that have large cities, have passed similar laws. In the trial of the children by the children's judge the state takes the position of a parent, not desiring to punish the child for what it has done but rather to help him get on his feet and lead a good and worthy life. Recently in Chicago, New York and other cities much good has been done by volunteer probation officers, men of means and of some leisure, who have each one adopted the position of "big brother" to some young boy brought before the court, and have tried to help him up, especially by finding him work, giving him a change of life now and then, and by showing sympathy and friendship.

K

K (*kay*), the eleventh letter, is a nonvocal consonant. It is called a guttural, because made by the soft palate closing on the back of the tongue, as in *ask*, *kill*. In such words as *cracked*, *k* prevents *c* before *e* from being pronounced as *s*. Before *n* in the same syllable, *k* is silent, as in *knot*.

Kabul (*kä'bul*) or **Cabul** was made the capital of Afghanistan by Timur in 1774. It stands 6,000 feet above the sea, and is overshadowed by the once famous fortress of Bala Hissar. The city has a large trade with India and Central Asia; its bazar rivals that of Kandahar; and it is noted for its fruits and its carpets. It is the seat of the reigning emir, and has a mint, a gun-factory and a modern arsenal. Kabul was captured twice by the British (1842 and 1880). Hindus, Jews and Afghan tribesmen make the population (75,000).

Kaf'irs, tribes inhabiting the southern portion of the African continent, particularly the coast of southeastern Africa. Their color is not so dark as that of the negroes, though their hair is woolly and they have broad noses and thick lips. Northward they become darker, until at last they blend with the negroes, and their distinctive racial features are lost. They are brave and, for the most part, kind and affectionate to their families. Polygamy is almost universal, wives being purchased with cattle. Their idea of the Supreme Being is very indefinite, but, although deficient in religious sentiment, they are superstitious, and belief in witchcraft is very general. There are some signs of a belief in a future state, the most marked being the worship of their ancestors.. Their number is estimated at 2,400,000, chiefly in Cape Colony, Natal, Transvaal and British Bechuanaland.

Kafiristan (*kä-fē-rēs-tän'*), a country of southern Asia, on the southern declivity of the Hindu-Kush Mountains. The area is about 5.000 square miles, and the inhabitants differ from surrounding tribes both in language and religion, all efforts to convert them to the Mohammedan faith having been in vain. They number about 200,000, and are divided into various tribes, which often war with one another, but are united in their love of independence and their hatred of Mohammedanism. Kafiristan, whose native tribes were subdued by the emir of Afghanistan in 1895, has been of late included in the countries under Afghan control, and has been garrisoned partially by the emir's troops. The soil is fertile, yielding sufficient fruit and grain for the inhabitants and furnishing subsistence for large herds of cattle, sheep and goats.

Ka'kabe'ka Falls. Near Port Arthur and Fort William in Thunder Bay District Ontario. There is a development of 12,000 horse-power electrical energy, and arrangements are being made to utilize the falls to the extent of an additional 30,000 horse-power. The power from these falls supplies Port Arthur and Fort William.

Kal'amazoo', a city in Kalamazoo County on the river of the same name, southwestern Michigan, noted for its great beauty and the enterprise of its inhabitants. It is situated 40 miles from the eastern shore of Lake Michigan and half way between Detroit and Chicago. It is reached by seven railroads; and the city possesses, besides a number of fine churches and schools, the western state normal school, Kalamazoo College, Nazareth Academy, the state asylum for the insane, two libraries and several music-academies. Kalamazoo has fourteen paper-mills, stationery, corset, loose leaf binder, stove, paper box, electric sign, boiler, railway supply and automobile factories. Population, 48,204.

Kaleidoscope (*kȧ-lī'dō-skōp*), an ingenious and pleasing optical instrument invented by Brewster in 1817. In its simplest form it consists of a tube in which are placed two mirrors or reflecting planes so hinged together along one edge as to make an angle with each other which is an aliquot part of 180°; while one end of the tube is fitted up with an eye-glass, and at the other end are two glasses, between which are placed little fragments of colored glass or other objects which it is desired to examine. The eye, looking into the tube, perceives these objects reflected many times. There are various modifications of the kaleidoscope which increase its power. It is sometimes used by designers of patterns, to whom it furnishes an almost endless variety of figures.

Kal'mucks, a branch of the Mongolian family inhabiting extensive regions in the Chinese and Russian empires. The Tartar name *Khalimick* signifies renegades. There are four principal tribes. They are a nomadic race, with a barbaric history running back through many centuries. The descendants of the famous Genghis Khan still rule one of the tribes. Wealth with them consists chiefly in flocks and herds. In Russia there now are about 120,000 Kalmucks, living mostly in Astrakhan. In religion most are Buddhists, but some are Mohammedans and a smaller number Christians.

Kama (*kä'mȧ*), the principal branch of the Volga, rises in the Russian province of Vyatka, and after an almost circular course of 1,000 miles joins the Volga about 40 miles below Kazan. The Kama is navigable from Perm, a distance of over 900 miles. It is free from ice a little more than half the year, and is one of the most important highways of commerce between Siberia and St. Petersburg.

Kamchatka, (*kȧm-chȧt'kȧ*), also spelled *Kamschatka*, a peninsula of eastern Siberia, stretching into the Pacific, between Bering Sea on the east and the Sea of Okhotsk on the west. It covers an area of nearly 150,000 square miles, although the population is under 10,000. Fishing and hunting constitute the chief occupations of the inhabitants, and furs are the most valuable production of the peninsula. Kamchatka was annexed to Russia at the close of the 17th century; and in 1855 was incorporated with the maritime province of Siberia. See Kennan's *Tent-Life in Siberia*.

Kamehameha (*kä-me-hä'me-hä*), the name of five kings of the Hawaiian Islands, who ruled successively from 1811 to 1872, except during the regency of two queens of Kamehameha II in 1824-33. Kamehameha II was the first king who became undisputed sovereign of the entire group. He died in 1819, a few months before the first American missionaries sailed for his country. Kamehameha III, who reigned from 1824 to 1854, is called Kamehameha the Good, on account of his liberal disposition toward his people and his active interest in their welfare. In 1840 he adopted a written code of laws and in 1852 a written constitution. Under his liberal administration a large portion of the common people became owners of land in fee simple. Great progress was made in religion, education and commerce during the 30 years of his reign. He died on Dec. 15, 1854. See HAWAII.

Ka'merun', a former German colony in Africa, north of French Congo, which was acquired in 1884. It has an area of 191,130 square miles, with a population estimated at 3,500,000, chiefly Bantu and Sudanese negroes, the whites numbering less than 1,000. Kamerun, together with other German possessions, was captured by the British forces in the European War (*q. v.*). Gold and iron have been found. The exports are rubber, ivory, horns, cocoa and oil fruits. Its name is derived from the river, which enters the Bay of Biafra by an estuary over 20 miles wide, and for a considerable distance is nearly a mile wide. The swamps along its banks make the climate trying for Europeans, but the country is very fertile. Northwest of the river's mouth lie the Kamerun Mountains, a volcanic group which in one peak, Mongoma Lobáh, the Mount of the Gods, reaches the height of 13,746 feet.

Kam'imu'ra, the Japanese vice-admiral who was appointed to blockade the Russian port of Vladivostock while Togo blockaded Port Arthur, won for himself a reputation second only to that of Togo. During the early part of the war he once or twice allowed the Russian fleet within the harbor to evade him. He encouraged this fleet to attempt to unite with the Port Arthur ships; intercepted them on Aug. 14, 1904; and sank the cruiser *Rurik* during a long stern chase, driving the other vessels back to port. In the great battle of the Sea of Japan on May 27 and 28 Vice Admiral Kamimura directed the armored cruiser squadron which annihilated the Russian cruisers.

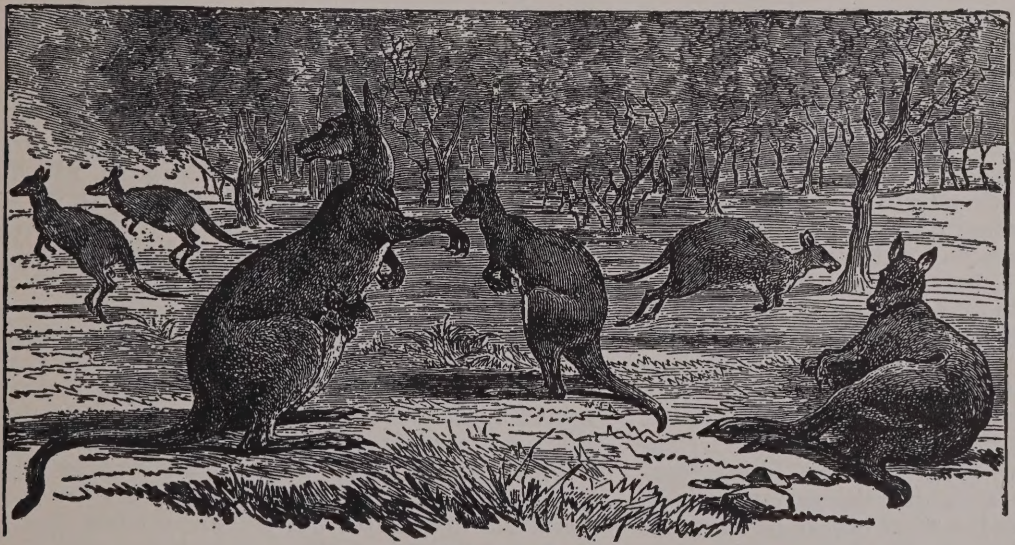
Ka'mloops, a town in British Columbia, situated at the confluence of the Thompson Rivers. It is the center of supply for a large mining and grazing district. Population 2,000.

Kana'kas are the people who were found inhabiting the Hawaiian Islands when Cook discovered them in 1778. They are reddish brown in color, with black and straight hair, sometimes a little wavy, thin beards, the face broad, with a rather flat sideview or profile, the nose somewhat flattened and the lips thick. They are of only moderate height, except the chiefs and their families, who are remarkably tall and large. When discovered, they were given to barbarous customs, as the killing of superfluous infants, human sacrifices and the eating of the heart and liver of the conquered foe. Yet they naturally are good-tempered, light-hearted, fond of amusement and devoted to riding and swimming, especially to riding the heavy surf-breakers, in which they are remarkably expert. But the coming of the whites seems to have introduced habits of drunkenness and to have brought diseases against which their constitutions cannot stand. Cook thought there were 400,000 when he saw the islands first. In 1823 there were but 142,000; in 1872 42,000, and at present there are still fewer. The natives are giving way to Japanese and Portuguese laborers on the sugar-plantations.

Kandahar (*kȧn-dȧ-hȧr'*), the largest city in Afghanistan, is situated about 200 miles west of Kabul. Kandahar is a place of extensive commerce, and among its residents are a number of Hindu and Persian merchants. The city is surrounded by a wall four miles in circumference, 25 feet in height and from 10 to 15 thick; and two miles north is a precipitous rock, crowned by a fortress impregnable to attack, save by the heaviest artillery. The town is supposed to have been founded by Alexander the Great, although the name is Persian. During the wars of 1879-81 the British, under General Roberts, entered Kandahar unopposed, and held the city for several months after they had evacuated the rest of Afghanistan. The population of Kandahar with its suburbs is estimated at 60,000.

Kane, Elisha Kent, a renowned American Arctic explorer, was born in Philadelphia, Pennsylvania, on February 3, 1820. He was graduated from the medical department of the University of Pennsylvania in 1842, and entered the United States navy as a surgeon in the following year. In May, 1850, he began his remarkable career as an Arctic explorer, in the capacity of surgeon, naturalist and historian with the first Grinnell expedition. In 1853 he accompanied a second expedition as commander, in search of Sir John Franklin. The object of this expedition was never attained. After two winters of the greatest hardships and privations, it was finally resolved to abandon the ship and return home. Kane reached Philadelphia in October, 1855. Shortly after, he published a narrative of the expedition. He died at Havana, Cuba, on February 16, 1857.

Kanem (*kä'nĕm*), a district of the Shari territory, is situated north of Lake Chad. It was formerly a small Moslem state, with its capital at Abeshr, the southern terminus of the caravan route from Benghazi on the coast of Tripoli. It accepted the protectorate of France during the summer of 1903, and now had Maô for its capital. It extends over an area of 21,876 square miles, and has a population of approximately 100,000.



KANGAROOS

Kangaroo (*kăn-gȧ-rōō'*), a pouched animal of Australia, belonging to the genus of marsupial quadrupeds. There are many species of kangaroo, varying in size from the wallabies which are comparatively small to the great gray kangaroo which attains a length of eight feet. This giant kangaroo was found near the coast by Captain Cook in 1770 but is now driven into the interior. The kangaroos are mainly grass-feeders, living on the open plains and cropping the herbage so short that they do much damage. They have very large hind limbs and very short front ones, with an enormous strong tail which is used as a third leg when moving slowly, and with the hind legs forms a support for the animal to sit upon. The kangaroo makes enormous bounds, jumping nine to ten feet at every leap, and covering the ground very swiftly. The young are very imperfect when born and remain in the mother's pouch until long after weaning, often until they attain a weight of ten pounds. They use the pouch as a place to retire to for shelter and food, and can often be seen with their heads protruding. The kangaroos ordinarily prefer open spaces, although a few kinds live among shrubs and one species is a tree-climber. They are widely hunted for their flesh and the value of their hides, and also because of their destruction of the vegetation.

Kankakee (*kăn-kȧ-kē'*), a city and the seat of Kankakee County, is situated on the Kankakee River, in northeastern Illinois, fifty-five miles south of Chicago. The city is served by the Illinois Central and Big Four railways. It is located in an excellent agricultural region, and near extensive coal fields. There is an abundance of building stone and bog-iron ore in the vicinity. Limestone is quarried near the city.

Kankakee has excellent water-power which is especially beneficial to the city's industrial development. Among the principal manufactures are pianos, wagons, furniture, agricultural implements, sewing machines, and knitted goods, cigars, foundry products, flour and starch, mattresses, bricks, and tiles.

The city has an excellent school system, both public and parochial. St. Joseph's Seminary is located here. There are several fine churches, a public library, and Y. M. C. A. The Eastern Illinois Hospital for the Insane is situated in Kankakee. In 1930 the population of the city was 20,620.

Kansas (*kăn'zȧs*), a west North Central State, is situated almost exactly in the geographical center of the United States. The name is derived from the Kansas Indians, and means "People of the South Wind." The

State is bounded on the north by Nebraska; on the east by Missouri; on the south by Oklahoma, and on the west by Colorado. It extends over an area of 82,158 square miles, 384 square miles of which are water, ranking thirteenth among the various states of the Union.

Surface. Kansas has a varied topography. In the east are heavy forests, with much hardwood, and a great amount of black walnut. The central and larger part of the State is a rolling prairie, rising westward to elevations of 4,000 feet. This prairie of arable land is broken by streams and rivers, along the banks of which are found clumps or slender lines of trees. Fields and roadsides are golden with sunflowers in season, giving to Kansas its popular name of "Sunflower State." There is much diversity in the soil, from the dark, deep loam of the limestone land in the eastern third to the soil of the plains and the sandy soils in the west. The land has high fertility all over the State. In the west and part of the central section of the State, for years the land was only used for pasturage, stock-raising being an important industry. Farms instead of ranches dot the eastern section.

Kansas has good drainage and is well-watered except in the west. The Missouri River borders the northeastern side for 150 miles, the only navigable river within the State. The chief drainage is eastward or southeastward. The Kansas River, 300 miles long, drains almost half of the State, and the Arkansas, with a total length of 1,460 miles, is second in drainage area for this State. There are a number of smaller streams and creeks. In the west, the land is irrigated from the Arkansas River in its fertile valley. This irrigation is becoming increasingly important, extending over 68,841 acres in 1932. Kansas has also almost inexhaustible supplies of pure water from ten to two hundred feet below the surface, available for irrigation by windmill or other power, which is being utilized extensively in numerous localities.

Climate. The climate of Kansas is subject to extremes of short duration, severe in winter and hot in summer. It is, however, constantly modified by the prevailing winds. There is never tropical heat or arctic cold. The annual precipitation for the whole State averages about twenty-eight inches, unevenly distributed. Rainfall is much heavier in the east, decreasing toward the west, where rainfall is seldom sufficient for agriculture, and irrigation must be resorted to. The State occasionally suffers from drouth, particularly in the west. One of the most severe dry seasons occurred in the summer of 1934, when the crops were burned up and the top soil actually blown off and carried for miles.

Minerals. Kansas has coal-fields underlying 15,000 square miles of the State from which the output in 1932 was 1,865,000 net tons. The oil fields are extremely important. Petroleum production in 1932 amounted to 34,350,000 barrels and natural gasoline to 24,600,000 gallons. There are large deposits of natural gas. Lead and zinc are important minerals also. The central counties contain quarries of limestone, sandstone and gypsum, all of excellent quality, underlying which is a seemingly inexhaustible salt bed. Kansas produced 699,160 short tons of salt in 1931, valued at $3,148,728.

Production and Industry. Kansas is essentially an agricultural State, although the mineral wealth is a heavy factor in production. In the eastern part of the State are the great corn and clover counties. Wheat and alfalfa are grown throughout the State, although the vast wheat acreage lies in the central plains. Beet-sugar production is important. In 1930, there were 166,042 farms containing 46,975,647 acres of the total land acreage of 52,335,360. The wheat harvest in 1932 was 106,551,000 bushels from 9,270,000 acres; corn, 136,197,000 bushels from 7,362,000 acres. Other important agricultural crops include clover and alfalfa, hay, oats, barley, rye, potatoes and flax. The production of Kaffir corn is chiefly confined to Kansas. Orchard fruits are also extensively cultivated. The raising of livestock is a very important industry. Food and pasturage is cheap and abundant, and with the mild climate, good water and close proximity to market, Kansas has become one of the four greatest cattle-producing States in the Union. Kansas City is the second largest livestock market in the world. The largest creamery in the world is situated in Topeka. In 1932, there were 3,392,000 head of cattle, of which 1,010,000 were milch cows. Other livestock included 3,109,000 swine; 779,000 sheep; 685,000 horses; and 143,000 mules. The wool clip in 1931 amounted to 3,243,000 pounds.

The leading industry in Kansas is slaughtering and meat-packing. Other important industries include flour and grain mills, and petroleum refining plants. The development of the zinc, oil and gas fields has led to establishments for the manufacture of glass. brick and cement, and for smelting. Dairies and dairy products are important. In 1929, there were 1,916 industrial establishments with 46,906 employes and a production valued at $734,919,439.

Transportation. In 1932 there were 9,684 miles of steam railway in the State, and 570 miles of electric railway. The State maintained 8,312 miles of highway, of which 7,344 miles were surfaced. One of the chief motor routes to the west crosses the undulating plains of Kansas. There is no water transportation except on the Missouri River bordering the State. Efficient air line service is in operation.

Population. The population of Kansas in 1930 was 1,880,999, an increase of 6.3 per cent over that of 1920. Of this total, 3.7 per cent were foreign-born whites, 3.5 per cent Negro, and 38.8 per cent urban. Indian Reservations, covering two square miles, had a population of 1,600. The chief cities, with their 1930 populations, are: Kansas City, 121,857; Wichita, 111,110; Topeka, the capital, 64,120; Hutchinson, 27,085; Salina. 20,155; Pittsburg, 18,145, and Leavenworth, 17,466.

Education. Kansas has always been among the States having a low percentage of illiteracy. Illiteracy in the State in 1930 was only 1.2 per cent, a decrease from 2.8 per cent in 1910. In 1931, there were 8,453 public elementary schools with an enrollment of 315,983 and 13,812 teachers; 688 public high schools with an enrollment of 92,014 and 5,800 teachers. There are three Normal schools which in 1931 had 3,221 students. The University of Kansas, at Lawrence, was founded in 1865, and is the leading institution of higher learning in the State, with an enrollment of 5,658 students and a faculty of 250 in 1932. The State Agricultural College is located at Manhattan with an enrollment of 3,923 and a faculty of 328. Other leading institutions include Kansas City University, Ottawa University, Washburn College and Kansas Wesleyan University. There are a number of institutions of a charitable nature. The federal government has established a military prison and a national soldiers' home at Leavenworth. Kansas has maintained a stand in the forefront of educational movements. The manufacture and sale of intoxicating liquors except for medical, scientific and mechanical purposes, is forever prohibited by a constitutional provision of 1880. The repeal of the Eighteenth Amendment is to be voted on November 6, 1934.

Government. Kansas is divided into 105 counties. The Legislature is composed of a Senate of forty members elected for four years and a House of Representatives of 125 members elected for two years. Biennial sessions are held. The State is represented in the National Congress by two Senators and seven Representatives.

History. Kansas has had a stirring history. Coronado explored the land, thinking it to be that of Quivera, but instead of the "seven cities" he found poor Indian villages, and the plains rich in fertility but lacking in the treasures he sought. Indians occupied the land when it was a part of Louisiana Territory, sold to the United States by Napoleon in 1803. White pioneers entered the territory at great peril, and suffered heavy privations and hardships. To protect the frontiersmen, the government established military posts. Cantonment Martin in Atchison County was the first, being established in 1818. Fort Leavenworth was established in 1827, and later Fort Scott and Fort Riley. Fort Leavenworth and Fort Riley are among the most important of the military posts in the United States.

In 1584 the Kansas-Nebraska Act organized Kansas as a territory and opened it for settlement. This Act also repealed the Missouri Compromise and anticipated the extension of slavery. It specified that the electors of Kansas should decide whether it be a free or slave state. This provision was the signal for the beginning of a bitter struggle. Friends of freedom and adherents of slavery both began vigorous campaigns according to their respective desires. Fraud and illegal methods in elections led to violence. The strife was fierce until Kansas was finally admitted to the Union on January 29, 1861, as a free state. The struggle over Kansas had affected the entire Union and was a contributing cause to the declaration of war. During the Civil War, Kansas furnished soldiers in excess of her quota and greater than the total number of her voters.

As a territory and in the early years of statehood, Kansas was involved in almost continual warfare, with Indians, over slavery, and with the South in the Civil War. This constant strife greatly retarded development. After the War, however, the veterans returned to their homes, settlers began to crowd into the State, and an epoch-making progress was begun. Kansas has a fascinating history not only as the State itself was being settled, but also in connection with the great Santa Fe trail across the State and the experiences of the great wagon trains, the cattle-drivers, and the groups of individual settlers who travelled through Kansas and beyond.

Kansas City, the largest city in the State of Kansas, and the seat of Wyandotte County, is situated at the junction of the Kansas and Missouri Rivers, about sixty-five miles East of Topeka. It adjoins Kansas City, Missouri, separated only by the State line.

Kansas City is an important industrial city. It ranks twentieth among cities in the United States in the value of manufactured products. It is an important livestock, grain, and flour center. The greatest industry is centered in the stock yards, which lie on the State line, partly in the State of Missouri. Kansas City has many soap factories, and lumber mills, well developed steel factories. It has one of the largest packing houses in the United States. A considerable trade in grain is carried on, with many large grain-elevators and other facilities for handling and storing wheat in large volume. There are numerous steam, and flour mills, railway car shops, machine shops, smelters, iron and steel works, cotton mills, cement works, terra cotta works, elevators, and candle factories.

The city has an efficient system of education embracing fifty-one elementary schools, three junior high schools, and five senior high schools, an Americanization school, and a continuation school. It also has seventeen parochial schools. It is the seat of Kansas City University, a college of medicine and surgery, St. Margaret's and Bethany hospitals. There are many excellent public buildings. A very fine School of Medicine at the University of Kansas offers unusual advantages to medical students, and its State School for the Blind is well-known throughout the country.

City administration is under the commission form of government. The voters elect a council which selects the city manager, who in turn appoints and supervises the various heads of departments. Directors of the various departments appoint their own assistants. Councilmen are subject to recall by the voters. In 1934 the construction of a new County Court House and Municipal Auditorium made to seat 21,000 was put under way.

Flood protection for the most valuable industrial district has been approved in a report to President Roosevelt. The program of improvement and protection as reported to the President will call for an expenditure of $18,292,850, the two Kansas Cities joining forces to provide the necessary funds for levee and channel work at the junction of the Kansas and Missouri Rivers.

Kansas City was founded in 1886 by consolidation of four smaller settlements, Wyandotte, Armourdale, Armstrong, and the original town of Kansas City. The city has many points of historical interest, among which are the old Huron Cemetery, which contains the remains of the celebrated chiefs of the Wyandottes. At the foot of Minnesota Avenue, Lewis and Clark landed in 1804, and there unfurled the American flag. On the south bank of the Kansas River lies the grave of the great Tecumseh and other strange Indian characters, and up the Kansas River are the old Secondine and Tiblow Indian Ferries.

In 1930 the population of Kansas City was 121,857.

Kansas City, an important city of Jackson County and the second largest city in the State of Missouri, is situated on the Missouri River about 285 miles west of St. Louis. Kansas City extends over an area of fifty-eight square miles. It is generally called the "Gateway of the West" due to the fact that nearly all arterial railways connecting the east, southwest and west pass through Kansas City.

The city is situated on three elevations, the first of which is occupied in the main by the huge manufacturing and wholesale interests of Kansas City. The second elevation is identified with the central business or retail trade of the city. Upon the third elevation spreads Kansas City's residential district, one of the most beautiful in the United States. The older portion of this district is built upon high hills formed by the bluffs of the Kansas and Missouri Rivers, and thence sloping south and east into a delightful undulating country which has been greatly beautified by parks and boulevards. These consist of sixty miles of boulevard, and 26,000 acres in public parks, the cost of which amounted to $14,000,000.

Kansas City is in the center of one of the finest agricultural, stockraising and fruit-growing regions in the world. It is the second largest primary grain market in the United States, handling over 100,000,000 bushels of grain per year. It also ranks second as a livestock market, the total receipts of livestock being 130,000 cars per year. Closely allied to the livestock transactions are the great packing houses which here maintain plants second only to the Union Stock Yards in Chicago, Kansas City ranks tenth among the cities of America in volume of manufactured products, its factories manufacturing products valued at about $319,000,000 per year or more than $1,000,000 per working day. There are about 1,300 manufacturing plants in the city with a very widely diversified output.

Thirteen trunk line systems provide the city with excellent railroad facilities. There are thirty-one separate lines serving the city. The Union Station is the third largest in America, being exceeded in size only by the two great terminals in New York City.

The park and boulevard system of Kansas City is comparable to the very finest in the United States. Among the most scenic drives are the Cliff Drive, the Paseo, and Kersey Coates Drive. Swope Park is the largest park in the city. It contains 1,380 acres.

Kansas City has an excellent educational system, modern and fully adequate. There are about one hundred and eighty public schools, graded and high, parochial schools, preparatory schools, and schools of music, commerce, medicine, engineering, law, and dentistry. An excellent public library is established in the city.

Two houses or councils comprise the legislative branch of the city government. The various departments of the city with the exception of the police courts are controlled by the Mayor. The police department is governed by a police board which consists of the Mayor and two police commissioners appointed by the Governor. In February, 1925, the city adopted a new charter, under which the aldermanic councilmanic government, city manager plan came into effect. A new council was elected consisting of nine members, one of whom is the Mayor who is to be the official head of the body and official head of the city.

The first permanent settlement was made at Kansas City in 1820 by a small company of French fur traders headed by Francois Chouteau. Originally Kansas City was but a river landing about two and one-half miles north of Westport. Upon this site a town was planned. The town soon became the center of a thriving trade with New and Old Mexico and with the Indian tribes in the territory west and southwest. From that time on Kansas City grew rapidly. In order to get into the country from the river, the bluffs from the hills had to be cut and levelled, and in no other American city have such changes in the natural contour of a location been made.

In 1860 the population was less than 4,000. Within ten years it increased to 32,260, and in 1930 the population was 399,746.

Kansas-Nebraska Bill, a "Democratic measure" which provided for the organization of two territories west of the Mississippi in 1854. On January 4, 1854, Stephen A. Douglas, acting in the capacity of Chairman of the Senate Committee on Territories, presented the Kansas-Nebraska Bill in Congress, holding that the "status of slavery in the proposed territory be determined in conformity with the principle underlying the Compromise of 1850." As originally introduced, the measure proposed the organization of a single territory to be known as "The Territory of Nebraska." The bill met with such violent protest, however, that it was changed to provide for two territories, Kansas and Nebraska, which were to be divided by the fortieth parallel.

The bill was not passed through Congress without a vehement struggle. The opposition to the bill in the Senate was led by Chase and Sumner. In the House it was attacked by ex-Senator Benton, and upheld by Alexander H. Stephens. It was only after much controversy that the measure was passed through Congress. President Pierce, supported by Jefferson Davis, stoutly upheld the bill. The measure was supported by an almost solid South, and the Democrats of the West. The passage of the bill was aided by the belief that Kansas, situated in such close proximity to Missouri, would vote for slavery, and that Nebraska would support the anti-slavery program of the North.

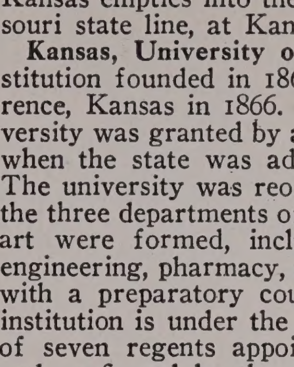
The Kansas-Nebraska Bill was favored by both "Democratic Idealism" and "economic interests," the latter interests centering about a transcontinental railway. As a "Democratic measure" the bill was signed by the President of the United States on May 30, 1854.

As a result of the Kansas-Nebraska Bill, the Missouri Compromise was repealed and the people of the territory granted the right to regulate their domestic institutions as they saw fit, "subject only to the Constitution of the United States." This grant of popular sovereignty was regarded as the most important part of the measure. Senator Douglas later said of the bill, "We did not pretend to decide the question of whether the Territorial Legislature had the power or not to prohibit slavery, but we did agree to give them all the power we had; and if they exercised it in such a manner as to violate the constitutional rights of any portion of the people, their remedy is to be found in an appeal to the Supreme Court, and not to Congress."

The most important outcome of the bill was the creation of two new organizations, the Republican Party and the American Party. The latter had its stronghold in the East. Its members were pledged with prejudice against foreign immigration and particularly Catholics. It was this party that became popularly known as the "Know Nothing Party," a name that was attached to the organization because its members persistently refused to impart any knowledge of the workings or principles of the organization to a curious outside throng. The measure proved to be a "death blow" to the Whig Party. The Southern Whigs voted for the bill, while the Northern Whigs strongly opposed its passage, and vast sectional differences arose within the Whig party ranks.

Kansas River, a river in the State of Kansas, also known as the Kaw, is formed by the union of the Smoky Hill Fork and Solomon Rivers near Abilene. Its length is three hundred miles, little of which is practically navigable. Its main tributary is the Republican River. The Kansas empties into the Missouri, on the Missouri state line, at Kansas City, Kansas.

Kansas, University of, a co-educational institution founded in 1864 and opened at Lawrence, Kansas in 1866. The land for the university was granted by act of Congress in 1861, when the state was admitted into the Union. The university was reorganized in 1889, when the three departments of literature, science and art were formed, including schools of law, engineering, pharmacy, music and the fine arts, with a preparatory course in medicine. The institution is under the supervision of a board of seven regents appointed by the governor and confirmed by the senate. The chancellor is named by the regents. Instruction is free to residents of the state, and only a nominal fee is paid by outsiders. Degrees are conferred not only in art and science, but in philosophy, law, medicine, music, painting, and civil and electrical engineering. The faculty in 1933 numbered 240, with a student enrollment of 4,851.

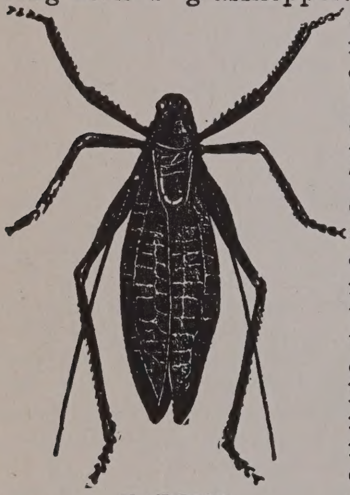

IMMANUEL KENT

Kant, Immanuel, a German philosopher of worldwide renown, was born at Königsberg, East Prussia on April 22, 1724, and died there on February 12, 1804. Kant's parents were poor but respectable, his father being a saddler or strapmaker. At the age of eighteen, Kant entered the University of Königsberg as a student of theology, but he soon gave up that profession and diligently applied himself to mathematics and the physical sciences. After supporting himself for years as a private teacher at Königsberg, Kant was appointed a professor in the university in 1770, and continued teaching and lecturing there until his death. Although Kant was fond of books of travel, he never was more than forty miles from his native town. He was temperate in his habits, patient and persistent in his work, and was much admired. The teacher's object, he always declared, should be to induce the habit of self-reflection in his pupils. While lecturing, it was his custom to fix his eye very closely on some student and judge by the face and eye of that one whether he was understood or not. Kant was the author of a large number of works, the most famous of which are his *Critique of Pure Reason*, his *Critique of the Practical Reason,* and his *Critique of the Faculty of Judgment.* In his political views Kant may be counted as one of the foremost champions of liberty and progress. In respect to religion his supreme idea was that of duty and obligation, leaving but little room for the play of the feelings. "Whoever will tell me," he was accustomed to say, "of a good action done, him will I thank, though it be the last hour of my life." A short time before his death he said to his friends: "I do not fear death; if I were sure of being called away this night, I could raise my hand to heaven and say: 'God be praised!'"

Kar′nak, Egypt. See THEBES.

Karyokinesis (*kăr′ĭ-ô-ki-nē′sĭs*) (in plants), the process by which cells ordinarily divide, The name refers to the fact that this prevailing method of division begins with a division of the nucleus, and then involves the whole cell. The various steps by which the nucleus divides are exceedingly numerous and intricate, and furnish some of the most recondite of botanical problems. This method of cell-division is also often called mitosis or indirect division. See CELL.

Katahdin (*kȧ-tȧ′dĭn*), the highest mountain in Maine, U. S. A. It has an elevation of 5,000 feet.



KATYDID

Ka′tydid′, familiar insect, classed as a long-horned grasshopper. It is a great singer, known more by its song of "Katy did, Katy didn't; she did, she didn't" than by sight. These insects are difficult to see on account of their color, which matches that of the leaves of the trees and bushes on which they live. They sing by night, sing all night, do not come to the fore until midsummer or later. It is a popular fancy that the song of the first katydid means six weeks to frost, — the prediction being often fulfilled. The males are the music makers, and call to their mates with their music. By rubbing the fore-wings little membranes are made to vibrate, a sound produced that carries sometimes a quarter of a mile and seems like human speech. The song of the snowy tree-cricket is often mistaken for that of the katydid in sections of the country where the latter does not live. Katydids are of a lovely pale-green color; the wing-covers delicate, not stiff like a grasshopper; the hind-legs longer and more delicate. It flies prettily, is a good jumper, and walks more than does the grasshopper. The broad-winged katydid has wings that bulge on each side, giving the insect an appearance of plumpness. The eggs are laid in regular rows on leaves and branches. The angular-winged katydid is common in our southern states. Early in the autumn the eggs are laid, deposited in a curious, overlapping double row on twigs, edges of leaves, sometimes on the edge of a fence-board, gummed securely in their place. They do not hatch until spring; then the egg splits along the top edge and the young katydid comes forth, at first very pale in color. In the south there are two broods a year, in the north but one. The eggs are often stung by a curious chalcidid parasite. Katydids do but little harm to vegetation, are looked upon friendlywise. Oliver Wendell Holmes speaks thus to the katydid:

"I love to hear thine earnest voice,
  Wherever thou art hid,
Thou testy little dogmatist,
  Thou pretty katydid!
Thou mindest me of gentlefolks—
  Old gentlefolks are they—
Thou say'st an undisputed thing
  In such a solemn way."

Kaunitz (*kou′nĭts*), **Wenzel Anton,** PRINCE VON, an Austrian statesman and diplomat, was born at Vienna, Feb. 2, 1711. Kaunitz began his public career under Charles VI, and was afterward employed by Empress Maria Theresa on diplomatic missions to Rome, Florence and Turin. At the congress of Aix-la-Chapelle, in 1748, he earned the rank of minister of state by the diplomatic talents he displayed. As Austrian ambassador at the French court in 1750–52, he succeeded in changing the enmity which had existed between France and Austria for nearly a century into friendship and good-will. For this service he was appointed prime minister, and for more than 40 years had the principal direction of Austria's political affairs. He also was a liberal patron of the arts and sciences. He resigned all his offices and retired from public life when Francis II ascended the throne (1792). He died on June 27, 1794. See *Lives* by Hormayr and by Beer.

Kazan (*kä-zän′*), capital of the Russian government of Kazan and ancient capital of the Mongol kingdom, was founded in the 15th century. The city was taken by the Russians under Ivan the Terrible in 1552 after a bloody siege, and the Mongol kingdom was brought to an end. Kazan is one of the most important educational centers of Russia, the university founded by Alexander I in 1804 containing a library of 80,000 volumes, an observatory, a botanical garden, four faculties and 875 students. The yards in which Peter the Great built his Caspian fleet are not far from the town. Population 143,707. Kazan also is a province, area 24,587 square miles with a population of about 2,200,000.

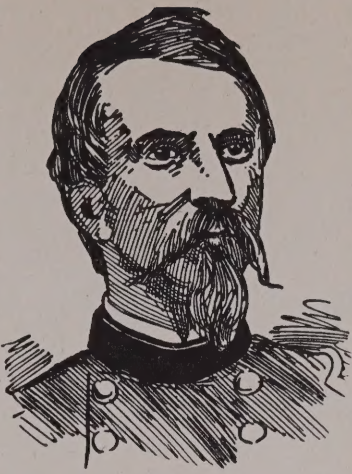
Kean, Edmund, a distinguished English actor, was born at London in 1787. He exhibited signs of dramatic genius at an early age, and in 1814 made his début in Drury Lane theater in London in the character of Shylock. He at once took rank as the leading actor of the day, and his subsequent appearance as Hamlet, Othello and other Shakespearean characters showed still more clearly the greatness of his power and his mastery of all phases of tragic emotion. Unhappily his irregularities of life were as marked as his talents; and his reputation was well-nigh ruined by the case of Cox *vs.* Kean in 1825. After the trial Kean paid a visit to America, remaining till the close of 1826, and on his return home he re-appeared on the stage; but his powers of body and mind were so impaired that he seemed little more than a wreck of his former self. His last appearance was at Covent Garden, March 25, 1833, when he suddenly broke down and fell insensible into the arms of his son. He never appeared on the stage again, and died at Richmond on the 15th of May following. See *Lives* by Barry Cornwall, F. W. Hawkins and G. T. Molloy.

Kear′ney (*kär′nĭ*), **Neb.,** county-seat of Buffalo County, in the Platte River valley. It has good water-power, graded schools and numerous manufactories, besides the state normal school, a parochial school, a military academy, a Carnegie library, the state tuberculosis hospital and a state industrial school for boys. Kearney has the service of four railroads. Population, 10,620.

Kear′ny, a town in Hudson County, N. J., on Newark Bay, opposite Newark. Its chief manufacturing establishments are Marshall Thread Co. with 2,000 employees, Nairn Linoleum Works with 1,200 employees and Arlington Celluloid Works with 1,000 employees, besides manufactories of roofing-material, metal bedsteads and golf-balls. The town has good public and parish schools, the Sacred Heart Industrial School for Boys, the Soldiers' Home and several churches. It has the service of four railroads. As New Barbadoes it was settled in 1755, became part of Harrison later, and was incorporated in 1871 and named in honor of Gen. Philip Kearny whose residence still stands within the limits of the town. Population 34,000

Kear′ny, Lawrence, a United States naval officer of considerable fame, was born at Perth Amboy, N. J., Nov. 30, 1779. He entered the navy as a midshipman in 1807. He served during the War of 1812 against Great Britain, and after it won great distinction by clearing the West Indies and the coast of the Gulf of Mexico of pirates. In 1832 he was promoted to the rank of captain, and in 1841 secured important commercial rights to Americans in China. He was made commodore in 1866, and died at Perth Amboy, Nov. 29, 1868.

Kear′ny, Philip, a soldier who distinguished himself in the Mexican War and in the War for the Union, was born at New York on June 2, 1815. He commanded a division in the Peninsular campaign in which he won an enviable reputation for courage and gallantry. He took an active part in the second battle of Bull Run and at Chantilly, Va., where he was killed by a Confederate soldier while reconnoitering in front of his command. His death, Sept. 1, 1862, was greatly lamented.



PHILIP KEARNY

Kear′ny, Stephen Watts, uncle of Philip Kearny, was born at Newark, N. J., Aug. 30, 1794, and died at St. Louis, Mo., Oct. 31, 1848. He entered the United States army in 1812, and served through various grades until 1846, when he rose to the rank of brigadier-general. At the beginning of the Mexican War in that year he commanded the Army of the West, which conquered New Mexico. After establishing a provisional government at Santa Fé, he marched to California and fought the battle of Pascual, in which he was twice wounded. On account of his services in Mexico and California he was brevetted major-general.

Kearsarge (*kēr′särj*), **The,** was the U. S. ship which in 1864 destroyed and sank that terror to commerce, the Confederate cruiser *Alabama*, and was shipwrecked in 1894. This vessel was named from a mountain in New Hampshire. The mountain reaches the height of 3,250 feet. A new battleship, *Kearsarge*, was launched on Aug. 8, 1907. She was said to be the first to leave the dry dock under steam.

Keats (*kēts*), **John,** author of *Endymion, Isabella, Hyperion* and other poems, was born at London in 1795. He attended a school at Enfield during his early years, and in 1810 was apprenticed to a surgeon. He practiced that profession for seven years, and then gave his entire attention to literature and especially to poetry. Although Keats lived only 26 years, his poetry displays genius of a very high order. He died of consumption at Rome in 1821. See *Life* by Lord Houghton and by Sidney Colvin.

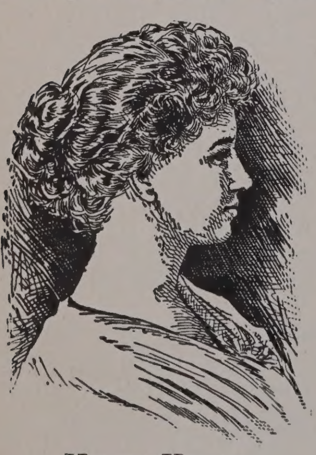
Keble (*kē′b′l*), **John,** an English clergyman and poet, was born on April 25, 1792. At 15 he entered Corpus Christi, Oxford, where he won prizes and otherwise distinguished himself. In 1827 Keble published his volume of sacred poetry entitled the *Christian Year*, which attained a very large circulation and an influence that can hardly be overestimated. Keble was one of the leading spirits in what was known as the tractarian movement in the Anglican church, and for several years was actively engaged with Pusey, Newman and others in issuing *Tracts for the Times.* He was professor of poetry at Oxford University from 1831 to 1841. His lectures were edited by Francis in 1910. Kebel College at Oxford University was founded as a memorial to him. He died at Bournemouth, on March 27, 1866.

Keene (*kēn*), a city and the seat of Cheshire County, New Hampshire, is situated on the Ashuelot River, about forty-three miles from Manchester. The principal industries of the city are the manufacture of shoes, glue, tubs, furniture, and pails. The repair shops of the Boston and Maine Railroad are located here. There is also a pottery and woolen mill in Keene.

Keene was first settled in 1734. At that time the settlement was known as Upper Ashuelot. In 1753 it was incorporated as Keene. In 1930 the population was 13,794.

Keller, Helen Adams. In our biographies we are accustomed to speak of physical defects, poverty and other circumstances which make lifework more difficult at the outset, as misfortunes. An examination of the facts would indicate quite the opposite. The nervous stammer of Demosthenes, the blindness of Milton, Bach and Fawcett, and the initial poverty of almost all rich men seems to be a strong indication that what we call misfortunes are simply obstructions that tend to force concentration and singleness of purpose.

The high value of the sense of touch in mental development is one of the great facts of education that have been emphasized for us in such activities as manual training and the Montessori methods. In the case of Laura Bridgeman and Helen Keller the sense of touch gave the only access to minds and souls struggling for growth out of the dark and the educational triumph in both cases is one of the most inspiring and significant things in the history of human progress. It shows what can be done with this one faculty alone.


Helen Keller

Helen Keller was born in 1880 in Tuscumbia, Alabama, endowed with all the senses. At the age of nineteen months, she contracted scarlet fever, which deprived her of both sight and hearing. When she was six and one-half years old, her parents read Charles Dickens' account of the wonderful work done with another deaf and blind girl, Laura Bridgeman. They sent to Boston for a teacher who might try to do the same for their little Helen. Miss Anna Sullivan (afterward Mrs. John A. Macy) was the answer. She came from the Perkins Institution and began to teach the little girl to understand words traced in the palm of her hand. The first word she learned was "water," which was traced in her hand by her teacher's finger, every time she was thirsty. When she understood that this word was connected with her thirst and its satisfaction, the first great step in her progress had been made. She soon learned to recognize many words, and then came the desire to teach her to talk. Sarah Fuller, of the Horace Mann School, came to be her teacher. By placing her hand on her teacher's throat and then imitating through the delicate sense of touch which recognized the vibrations and positions of muscles in her own throat, Helen Keller learned to talk within a month.

She went to the Wright-Humaston School and the Cambridge School. With Miss Sullivan's assistance, she was graduated from the regular course at Radcliffe College in 1904. She had become so skillful in translating the pressure of another's fingers on her hand, that she could sit beside Miss Sullivan and receive from her through this medium a lecture almost as fast as it was uttered. She learned to speak perfectly so that she could make public lectures, and toured the country at several different times. Naturally she used the Braille system for the blind, also. Something of the peculiarities of the speech of individuals was revealed to her when she placed her hand on the mouth and throat of the speaker. Her sense of smell was as keen as her sense of touch, and became a source of some of her greatest pleasures.

Miss Keller's imagination was keen and highly developed from earliest days. She constantly spoke of visable things in a way to show that she must have retained something of the impressions of those first nineteen months of sight and hearing, or not even her vivid imagination could altogether supply her understanding. One of the astonishing things to seeing and hearing people who came in contact with her through the years was her amiability, her happiness. As a child shut away from the world by her affliction, she was fast becoming self-willed and unmanageable, but when she began to learn to communicate with the outside world and the people in it, she became gracious and gentle, as she remained all her life. Her years have been lovely and delightful in their compensation to her, although the majority of people consider that she has lived under an almost intolerable burden of affliction. In 1934, her beloved teacher and friend, Miss Sullivan, secluded at the little cottage Miss Keller had purchased in England, faced blindness as a certainty for herself. Miss Keller, in America, hearing of the affliction, left at once to sit at the bedside of her former teacher and through the philosophy which has sweetened her own life, seek to allay the bitterness of this deprivation, commonplace to her, but a tragedy to one who had gone through life seeing and hearing. In addition to her lectures, Miss Keller is an accomplished author. She has written for a number of periodicals, including the *Ladies' Home Journal*. Her published works include *The Story of My Life; Optimism; The World I Live In; The Song of the Stone Wall; Out of the Dark*, and *My Later Life*.

Kellogg, Clara Louise, an American opera singer of rare gift, was born of northern parentage at Sumterville, South Carolina, in 1842. She was educated in music in New York City, where she made her debut in 1861 as Gilda in Rigoletto. She sang in the Academy of Music during 1861 and 1862. In 1867 she made her first appearance in London, where she sang in Her Majesty's Theatre in London, being accorded a brilliant reception and engagement for the following season. She also sang in London in 1872 and in 1879. In 1872 she returned to the United States, where she sang in all the principal cities of the country before returning to London to sing with Nilsson at the Drury Lane Theatre. After a tour of the European continent, including visits to St. Petersburg and Vienna, she retired in 1880, afterward appearing chiefly only in concerts. Her principal successes were the rôles of Marguerite in Gounod's *Faust*, Rigoletto in the *Barber of Seville*, and Lucia in *Lucia di Lammermoor*. In 1887, she was married to Carl Strakosch, a nephew of Max Strakosch, the great impresario. She died in 1916.

Kellogg, Frank Billings, a noted American statesman, and Judge of the Permanent Court of International Justice, was born at Potsdam, New York, on December 22, 1856. When he was nine years of age his parents moved to Elgin, Minnesota, where he attended the public schools. At the age of nineteen, he went to Rochester, Minnesota, where he read law in the offices of H. A. Eckholdt and R. A. Jones. He was admitted to the bar in 1877, and in 1878 elected as city attorney. He held this position for three years at a salary of $150 per year.

In 1880, Frank B. Kellogg went into partnership with Burton W. Eaton. As their clients were few, the partners decided to increase their income from a public office. Consequently, both ran for the office of district attorney in 1881, Kellogg on the Republican ticket and Eaton on the Democrat. In this way they were assured of election for one, and an increase of $800 per year in the firm income. Kellogg was elected, and served in that capacity for five years.

While serving as district attorney, Mr. Kellogg met Cushman K. Davis and Cordenio A. Severance, two prominent attorneys of St. Paul, Minnesota. With them he formed a partnership in 1887, and moved to St. Paul, where he practised law in the firm of Davis, Kellogg and Severance for thirty years. During the presidency of Theodore Roosevelt, Kellogg served as special counsel for the United States in its famous cases against the paper and Standard Oil trusts and in the Interstate Commerce Commission, investigation into the Harriman railroads. His victories in these instances won him the national title of "Trust-buster."

In 1912, Frank B. Kellogg was elected president of the American Bar Association, and in 1916, he was elected to the United States Senate, where he served until 1922. He supported the Republican reservations to the Treaty of Versailles, and yet in a speech in 1919, he declared to the Senate that he was not hostile either to the Treaty of Versailles or to the League of Nations. He attended as delegate the fifth Pan-American Conference, held at Santiago, Chile. In December, 1923, he was appointed by President Coolidge as American Ambassador to the Court of St. James in London. In 1925 he resigned this position to succeed Charles E. Hughes as Secretary of State, where he served until 1929.

In this office Mr. Kellogg sought international harmony consistently. His great achievement was the international agreement outlawing war, officially known as *The Pact of Paris*, but more popularly referred to as the *Kellogg-Briand Peace Treaty*, as it was written in collaboration with Aristide Briand, the Foreign Minister of France. This treaty, ratified by almost every nation of the civilized world, won for Frank B. Kellogg lasting fame, and secured for him the award of the Nobel Peace Prize in 1929. In 1930, he was elected Judge of the Permanent Court of International Justice at The Hague, where he has since served.

See BRIAND, ARISTIDE; DAWES PLAN; KELLOG-BRIAND PEACE TREATY.

Kelly, William, the inventor of the steelmaking process called Bessemer's or the pneumatic process, was born at Pittsburgh, Pennsylvania, in 1811. In 1847, while manufacturing iron, he discovered that for melted metal air is fuel and other fuel is needless. He saw a white spot at the edge of molten iron in a furnace. At this spot the iron was incandescent, and almost gaseous, although no fuel was burning at this spot in the iron. Air alone was blowing on the spot. Now, air contains oxygen, iron carbon, and carbon and oxygen have what chemists call an affinity for each other. Kelly knew these facts. Hence he blew air into melted iron, the oxygen captured and carried away the carbon, pure iron was left and modern steelmaking was invented. In 1851 Kelly built the first converter, and in 1857 the first tilting converter. After he learned in 1856 that Bessemer of England had patented the process in America, Kelly convinced the patent-office that he himself was the real inventor, and received a patent. Five years later, his genius was recognized, the British themselves acknowledging that Kelly had discovered the process before Bessemer did. The patent-office renewed his patent in 1870, because he had not received sufficient remuneration. Consequently, in the next seven years, he received $450,000 in royalties. He remained in business until he was past seventy years of age. When he died, his process and our natural advantages had made America the second steel-making country of the world. It is said that he was the first employer in the United States to use Chinese labor. He died at Louisville, Kentucky, in 1888.

Kellogg-Briand Pact, The, also known as the "multilateral treaty for the renunciation of war," was ratified by fifteen leading nations of the world at Paris, France, on August 27, 1928. Negotiations had been under way for two years preceding the signing of the pact, primarily because the arbitration treaty between France and the United States was to expire on February 27, 1928. The chief sponsors of the pact were Frank B. Kellogg, American Secretary of State, and Aristide Briand, French Minister of Foreign Affairs.

Fifteen nations signed the Kellogg-Briand Pact in August of that year, although since that date practically every nation in the world has adhered to the treaty. The fifteen original signers were: Australia, Belgium, Canada, Czechoslovakia, France, Germany, Great Britain, India, Irish Free State, Italy, Japan, New Zealand, Poland, Union of South Africa, and the United States. The pact was ratified by the United States on January 15, 1929, by a vote of eighty-five to one. Two days later, on January 17, President Coolidge approved the treaty.

The principles of the treaty which gave promise of "lasting world peace" are contained in the following articles:

"Article I. The high contracting parties solemnly declare in the names of their respective peoples that they condemn recourse to war for the solution of international controversies, and renounce it as an instrument of national policy in their relations with one another.

"Article II. The high contracting parties agree that the settlement or solution of all disputes or conflicts of whatever nature or of whatever origin they may be, which may arise among them, shall never be sought except by pacific means.

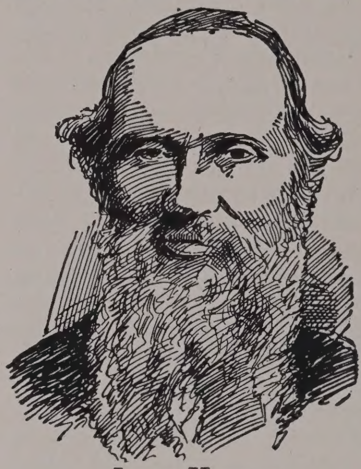
"Article III. The present treaty shall be ratified by the high contracting parties named in the preamble in accordance with their respective constitutional requirements, and shall take effect as between them as soon as all their several instruments of ratification shall have been deposited at Washington.

"This treaty shall, when it has come into effect as prescribed in the preceding paragraph, remain open as long as may be necessary for adherence by all the other powers of the world. Every instrument evidencing the adherence of a power shall be deposited at Washington and the treaty shall immediately upon such deposit become effective as between the power thus adhering and the other powers parties hereto.

"It shall be the duty of the Government of the United States to furnish each Government named in the preamble and every Government subsequently adhering to this treaty with a certified copy of the treaty and of every instrument of ratification or adherence. It shall also be the duty of the Government of the United States telegraphically to notify such Governments immediately upon the deposit with it of each instrument of ratification or adherence."

See BRIAND, ARISTIDE; DAWES PLAN; KELLOGG, FRANK B.

Kelvin, Lord, Sir William Thomson, world-famed Scottish physicist, and inventor, was born at Belfast, Ireland, in 1824. At the age of eight he removed to Glasgow with his father, a professor in the university. Kelvin was graduated at St. Peter's, Cambridge, in 1845, being second wrangler and Smith's prizeman. In 1846, he accepted the chair of physics at Glasgow University, occupying that position for fifty years. In 1866 he was knighted for his signal achievement in solving the scientific problems connected with the first Atlantic cable. In 1892 he was raised to the peerage. His contributions to physics are so numerous and cover so wide a range that it is impossible to do more than allude to a few of the more remarkable ones. His contributions to science are contained in *Papers on Electrostatics and Magnetism; Mathematical and Physical Papers; Popular Lectures; Molecular Dynamics* (a course of lectures on *Light*) and his masterly treatise on dynamics, written in conjunction with Professor Tait of Edinburgh. His inventions and improvements of electrical measuring instruments, navigator's compass and deep-sea sounding apparatus have been of exceeding value to commerce as well as to science. His death occurred in 1907.


LORD KELVIN

Kemal, Mustapha, a distinguished Turkish statesman and first President of the Republic of Turkey, was born in 1881 in Salonika. His parents, humble middle class folk, reared their son in the Moslem faith. He was educated at a military school in Germany. At an early age he entered the army and obtained an officer's commission from the Military College at Harbié. His keen mind, constant alertness and sharp wit won him many admirers, among them the late British Field Marshal Sir Henry Wilson who predicted a brilliant future for the young soldier.

Soon after the campaign against the Italians in Tripoli, which was the first active service experienced by young Kemal, he became Military Attaché to Bulgaria. His military skill was excellently displayed during the World War, so well displayed in fact that his superiors became envious of his marked success and ability and brought to pass his retirement from active service for a three-year period. At the close of the World War came the dismemberment of Turkey. It seemed as though the old Turkish empire which was existing upon Ottoman tradition, would become a very insignificant nation in Asia Minor. Greece and France were particularly jubilant, Greece because much of the Turkish territory in Europe would be given to that nation, and France because some of the territory in Asia Minor would fall under the power of the French. The Turkish army was disorganized and Mustapha Kemal was not fortunate enough to be in the good favor of the Sultan's government. The Allies and Greeks were invading Turkey. Kemal Pasha believed that this was an opportune time for a daring rival of the Sultan to begin the revolution which four years later was to bring him into control of the Turkish Government. At the head of the Nationalists this ardent patriot started the revolution which was to save Turkey from complete dismemberment, in a town situated on the Black Sea, Samsun. He developed an excellently drilled and equipped army. In April, 1920, he set up a *de facto* government at Ankara which was known as the "Government of the Grand National Assembly of Turkey." In 1922 he was victorious over the Greek army in Anatolia. In November of this same year the Grand National Assembly voted the dissolution of the office of Sultan and took over the administration of Constantinople. The Sultan was expelled from Constantinople. It was not until the following year, however, that a Republic was proclaimed and the national leader of the Turks, Kemal Pasha, was elected first President of that Republic. Since 1923 he has devoted his life and energy to building a united Turkey, a modern and prosperous nation.

It was shortly after Kemal's victory over the Greeks in Anatolia that he married Latifé, a charming and brilliant young Turkish woman. The marriage lasted but a year or so, however, and since then Mustapha Kemal has lived as a bachelor.

The people of Turkey refer to Kemal as the "Gazi" which means "Victor," a fitting title when one considers that Kemal has been victorious in every move he has made. Since Gazi Mustapha Kemal has been at the helm of government in Turkey, he has effected countless reforms. One of his most important reforms, and the one which marked the completion of a successful revolution, was made on March 2, 1924, when the Turkish Caliphate was abolished. Kemal is also responsible for the abolition of polygamy, the emancipation of Turkish women, the creation of a new alphabet, the separation of Church and State, the substitution of Turkish for Arabic in the Moslem ritual, and the discard of the fez which was formerly worn in Turkey. His reforms have been far-reaching. Not only is Kemal the President of Turkey, and as such his decisions must be ratified by the National Assembly, but he is the Chief of the Kemalist, the dominant party in Turkey today, in which position his power is unlimited. On November 1, 1927, and on May 4, 1931, he was reelected by a unanimous vote as President of the Republic of Turkey. Under his rule Turkey has been revolutionized and in addition to the outstanding reforms within Turkey, a new foreign policy has been adopted through which Turkey has established friendly relations with Iraq, Persia, Afghanistan, Russia, Italy, Greece and Bulgaria.

Mustapha Kemal is indeed a "Gazi." The world of today recognizes him as a great statesman, a keen executive, an able warrior and a charming and versatile companion.

Kenilworth, a historical novel by Sir Walter Scott. It takes its title from the famous little town of Warwickshire, England, and its once magnificent castle. The time of the story is 1565, and its characters include Queen Elizabeth, the Earl of Leicester and lovely Amy Robsart, Leicester's hapless wife. Its pictures almost compare for brilliancy and vividness with Shakespeare's studies in English history. The scene between Elizabeth and Leicester and Sussex, whom she tries to reconcile, paints more impressive pictures on the mind than great historical painters put on canvas. Yet the scene in which Elizabeth discovers the Countess of Leicester and in Amazonian fury drags her off to confront the man whom both women love, is still more dramatic. The tale ends in tragedy, through Leicester causing his wife to be murdered, and seldom have pity and terror been so blended. The Elizabeth, Leicester and Sussex of Scott, lives in literature beside the Henry V, King John and Richard III of Shakespeare.

The castle of Kenilworth was founded in 1120, and after its inheritance by Henry IV, remained a crown possession until Elizabeth gave it to Leicester, who entertained her there in July, 1575, for eighteen days at a daily cost of $5,000 (£1,000). It is now in ruins. The town of Kenilworth is a market-town five miles north of Warwick, in which tanning is the chief industry.

Kennan, George, an American author and traveller, was born at Norfolk, Ohio, on February 16, 1845. He was educated in the Norfolk public schools, and studied telegraphy. In 1864, he was sent by the Russo-American Telegraph Company to superintend the construction of lines in Siberia. He returned to the United States in 1868, and two years later published a journal of his travels under the title of *Tent-Life in Siberia.* He returned to Russia in 1885 to visit the mines and prisons in Siberia. *The Century Magazine* published an account of his experiences and observations in a series of articles which was later published in a single volume as *Siberia and the Exile System.* Mr. Kennan also wrote *Folk Tales of Napoleon; Campaigning in Cuba,* and *The Tragedy of Pelee.* He died in 1924.

Kennebec (*kĕn-ē-bĕk*), a river of Maine, which rises in the western part of the State from Moosehead Lake and flows southward into the Atlantic Ocean. Its length is 190 miles, and it falls about 1,000 feet, affording abundant waterpower. It is navigable for large vessels for ten or twelve miles from its mouth. Augusta, the capital of the State, is located on this river.

Kenora (*kē-nō'rȧ*), formerly called Rat Portage, is situated in Ontario Canada, one hundred miles east of Winnipeg, There is a dam here across Winnipeg River which gives a head of twenty feet with a storage area of about 2,000 square miles, in the Lake of the Woods. In time not only Kenora and its mills but Winnipeg and other places with their industries will be supplied with power from these works, which have a capacity of about 30,000 horse-power. Kenora is a lumbering and milling center and an attractive summer-resort. The vicinity is famed as a gold-mining district. In 1931 the population of Kenora was 6,766.

Kenosha (*kē-nō'shȧ*), an industrial city and the seat of Kenosha County, Wisconsin, is situated on Lake Michigan, in the southeastern part of the State, thirty-four miles south of Milwaukee, and fifty miles north of Chicago. It is served by the Chicago and Northwestern Railroad, two electric railways, and Sheridan Road, a famed automobile highway. There is a good harbor at Kenosha, connecting it by boat with important lake ports. It is well situated for lake traffic. Among its buildings of note are the Federal Building, Kemper Hall School and a public library. Kenosha is an attractive city with a business district lining broad streets and broad avenues lined with beautiful residences. There are municipal water-works. The Rambler automobile factory is situated in Kenosha, and the largest sole-leather tannery in the world is operated there. Other important industries include the manufacture of brass and iron beds, wagons, furniture, underwear, and hosiery. The population in 1930, was 50,262.

Kensington, a parliamentary and metropolitan borough of London, England, adjoining Westminster. Kensington Palace was purchased by William III in 1689, given to the nation in 1899. It was a favorite residence of Queen Mary, William and Anne. Kensington was the birthplace of Queen Victoria and the scene of the death of George II. Kensington Gardens are beautiful public gardens covering about 350 acres. Albert Memorial, erected by Queen Victoria to her husband, stands at their southern entrance, and several museums are located here.

Kentucky (*kĕn-tŭk'ĭ*), the "Blue Grass" State, is one of the east south-central states, and thirty-sixth in rank in the United States. It is bounded on the north by Illinois, Indiana and Ohio; on the east by West Virginia and Virginia; on the south by Tennessee, and on the west by Missouri, Illinois, and Indiana. Its extreme length from east to west is about 400 miles, and its greatest width from north to south is about 175 miles. Kentucky extends over an area of 40,598 square miles, 417 square miles of which are water.

Surface. Kentucky is divided into three topographical parts, the mountainous regions of the east and southeast, which comprise about one-eighth of the State; central Kentucky which comprises about three-eighths of the area; and western Kentucky which comprises the remainder. The outline of the State is very irregular, the northern border being 600 miles in length due to the sinuosity of the Ohio River, and the southern boundary being quite straight except in the extreme southwestern portion. The surface is primarily a plateau with an average elevation of 800 feet above sea level. The northern and central portions are gently rolling, dotted with hills and valleys. Just east of Louisville lies the famous Lexington Plain, an extremely fertile semicircular area of about 10,000 square miles, covered by the celebrated "blue grass" from which the State is named. The southeastern portion is crossed by the Allegheny Mountains. The Cumberland Mountains rise farther west, containing the Big Black Mountains, 4,150 feet high, the highest peak in the State. The White Mountains, a short chain, run almost parallel to them.

This mountain region, with the "Blue Grass" section, makes Kentucky one of the loveliest of the States, as it possesses scenic beauty everywhere. One of the greatest attractions is the magnificent Mammoth Cave, the largest of a group of caverns in central Kentucky, underlying 9,000 square miles. Over 150 miles of its subterranean passages and cathedral-like rooms have been explored and mapped. Therein are contained unusual and striking creations. Another outstanding marvel of nature is the Natural Bridge, over 100 feet in suspension length and thirty feet wide, of reddish rock in a setting of primitive woods, cliffs and mountains.

The rivers of Kentucky flow to the northwest. The State is bordered by 813 miles of navigable rivers, chief of which is the Ohio River, forming the entire northern boundary.

Climate. A milder and more even temperature than that of the neighboring states prevails in Kentucky. The average temperature is about fifty-five degrees for the entire State, with no extremes of heat or cold. The mean annual precipitation is approximately forty-five inches, evenly distributed throughout the year, with very little snow. In the lowlands along the Mississippi some malaria is prevalent. The other districts are remarkably healthful, statistics showing that Kentuckians are a particularly healthy people.

Minerals. The chief minerals are bituminous and cannel coal, of which 35,610,000 net tons were mined in 1932 from the extensive fields. Petroleum is found in large quantities in southeastern Kentucky where there are heavy Devonian deposits. In 1932 there were 6,264,000 barrels of petroleum produced. Natural gas is also an important product. There are valuable quarries of limestone of excellent grade, called "Bowling Green Stone." Other minerals found in the State include sandstone, clays, cement, zinc, lead, iron and mineral waters.

Production and Industry. Kentucky is largely an agricultural state. In 1930 there were 19,927,286 acres of land under cultivation on 246,499 farms. Corn and tobacco are the chief crops. In 1932, 2,811,000 acres were planted to corn, yielding 67,464,000 bushels. Tobacco acreage was 433,000, from which 345,101,000 pounds were produced in 1932. This was produced from two chief sections: the "black patch" in the south, and the light leaf used for smoking and chewing tobacco, raised in the "Blue Grass" region. Kentucky was awarded first place over North Carolina in 1931 with this crop. The wheat crop in 1932 amounted to 2,835,000 bushels. Other important products include hay and forage crops, watermelons, sweet potatoes, sugar-cane, and fruits. The greater part of the total crop of hemp in the United States is produced in Kentucky. The livestock industry is very important, particularly the raising of thoroughbred horses, which are unexcelled. On January 1, 1932, there were 222,000 horses in the State; 241,000 mules; 589,000 milch cows; 978,000 other cattle; 875,000 sheep, and 899,000 swine. The income from all crops in 1931 amounted to $79,734,000; from livestock and livestock products, $70,045,000. The extensive forests of oak, maple, beech, walnut, ash, pine and cedar afford excellent opportunities for the lumber industry and important woodworking establishments. The manufacture of famous Kentucky whiskey is a large industry. Other manufactures include tobacco products, cotton goods, and iron and steel products.

Transportation. In 1932, there were 3,999 miles of steam roads in the State and 489 miles of electric lines. Macadamized and gravel roads also furnish safe and rapid transportation. The State maintains roads covering 5,950 miles, 5,198 miles of which are surfaced. One of the most important roads in the State is the Dixie Highway which extends from Louisville to the Tennessee border. There is excellent water transportation throughout the State.

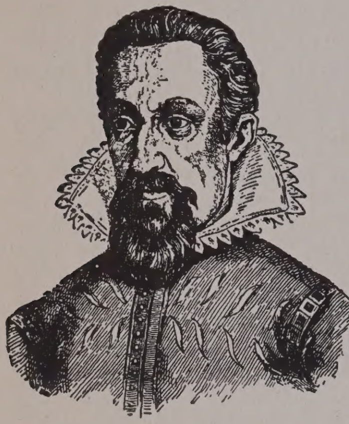
Population. According to the census of 1930, the population of the State was 2,614,589, of whom 8.6 per cent were Negro, and 30.6 per cent urban. Louisville is the largest city, with a population of 307,745. Frankfort is the capital, and is ninth in size among Kentucky cities, having a population of 11,626.

Education. In 1930, illiteracy in Kentucky was 6.6 per cent among inhabitants of ten years of age and older. This was divided among native whites, 5.7; foreign-born whites, 5.8 per cent, and Negroes, 15.4 per cent. In 1931 there were 7,950 public schools with an enrollment of 529,012 pupils and 13,919 teachers; 723 high schools with 64,367 pupils and 3,269 teachers. Six public Normal Schools had a combined enrollment of 9,383. Separate schools for Negroes are maintained, but they enjoy the same advantages as the whites. The University of Kentucky, founded in 1865, is situated at Lexington. In 1932 it had an enrollment of 3,052 students and a faculty of 273. Other important institutions of higher learning are Berea College, the University of Louisville, and Kentucky Wesleyan College.

Government. The State has had four Constitutions, the present one having been adopted in 1891. The State legislature comprises a Senate of thirty-eight members, elected for terms of four years, and a House of Representatives of 100 members, elected for two years. Sessions are held every two years. The State is divided into 120 counties, and is represented in the National Congress by two Senators and nine Representatives.

History. In 1673 Marquette and Joliet discovered the territory comprised in Kentucky, which was originally a part of Fincastle County, Virginia. Shortly after 1760 the region was explored by Daniel Boone and his companions. In 1774 the first settlement was made at Harrodsburg, and a year later Boonesborough was founded. The Indians showed great hostility toward the settlement, which led to Indian wars of such ferocity and extent, that from them Kentucky received the name of the "Dark and Bloody Ground." In 1776 the district was organized as Kentucky County. In 1790 it became a separate territory, and in 1792 was admitted to the Union as the State of Kentucky. Kentucky played a conspicuous role in national affairs figuring prominently in the War of 1812 and the Mexican War. Much suffering was endured during the Civil War but the State did not secede. The Battle of Perryville was fought on Kentucky soil. Kentucky fared better than the remainder of the South during the days of reconstruction as she was not forced to submit to military rule.

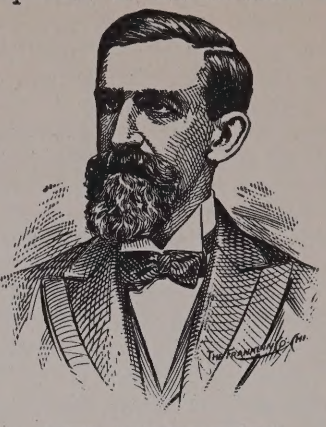
Keokuk (*kē'ō-kŭk*), a city and the seat of Lee County, is situated in the southeastern corner of Iowa, at the confluence of the Mississippi and Des Moines rivers, about 145 miles north of St. Louis, Missouri. In 1873 the Government built a canal around the Mississippi rapids here, making continuous navigation possible between New Orleans and St. Paul. Congress granted the Keokuk and Hamilton Water Power Company the right to dam the river and construct a hydro-electric plant at this point. The government canal with its three locks was far too small for the present day traffic, and was drowned out by the power plant. The new lock built to replace the old canal is one of the largest in the world. The old single-deck bridge has been reconstructed into a double-deck bridge, the railroads and street cars using the lower level and the upper level forming a high bridge that lands the highway traffic at the summit of the hill on the Iowa side. The cheap hydro-electric power attracts factories of all descriptions to Keokuk, among them being a $2,250,000 smelter. Keokuk is operated under the commission form of government and has a population of 16,500.


JOHANN KEPLER

Kep'ler, Johann, one of the greatest of astronomers, was born at Weilderstadt, Germany, Dec. 27, 1571. Kepler when young showed great aptness for learning, and in 1588 was sent to the University of Tübingen at the expense of the duke of Württemberg, to study for the ministry, but soon abandoned theology for mathematics and astronomy; and to astronomy, in spite of poverty, sickness and many other trials, his life was henceforth devoted. Copernicus had already established the fact that the planets revolve around the sun, but they were still supposed to move in circles, with no unity among them, except that the sun was their common center. After more than 20 years of study and investigation Kepler was able to announce the three laws of planetary motion, which formed the groundwork of Newton's discoveries and constituted the starting-point of modern physical astronomy. These laws are: (1) the planet's orbit is an *ellipse*, of which the sun is one focus; (2) as the planet describes its orbit, its radius vector traverses equal areas in equal times; and (3) the square of a planet's periodic time is proportional to the cube of its mean distance from the sun. Besides these immortal discoveries, the world is indebted to Kepler for discoveries in general physics and geometry. He died at Ratisbon, Nov. 15, 1630. See Brewster's *Lives of Galileo, Tycho Brahé* and *Kepler.*

Kern, John Worth, was born at Alto, Ind., in 1849. He studied at Indiana Normal College and (1866–7) at the University of Michigan. He then studied law, and in 1869 was admitted to the bar at Kokomo, Ind Next year he was elected city-attorney and reëlected five times. In 1884 he became reporter to the Indiana supreme court, removing to Indianapolis in 1889. During 1893–7 he served in the state senate. In 1900 and 1904 he ran for governor, but was defeated.

In July, 1908, he received the Democratic nomination for the vice-presidency; in 1911 was elected to the U. S. Senate. He died in 1917.


JOHN WORTH KERN

Kerensky (*Ker-en'ski*), **Alexander Feodorovitch,** was born of impoverished noble parents in Taskent, Siberia, in 1881, became a member of the Greek Orthodox Church, worked his way through the University of Petrograd, made a brilliant success as a lawyer defending the cause of the peasant, the working man and the despised Jew and when the Russian revolution came was a Socialist member of the Duma and became premier under the new regime. Lenine (*q. v.*) although also a Socialist, belonged to the radical wing of the party, known as the Bolsheviki (*q. v.*) and as their leader, organized a counter revolution, overthrew Kerensky, and himself became premier. Kerensky was forced to flee the country.

Kew, a village in Surrey, England, on the right bank of the Thames River, famous for the royal botanic gardens that cover 75 acres In addition to numerous hothouses and conservatories, the principal features are a palm-house, 362 feet long, 100 feet wide and 66 feet high; a temperate house of the same height, occupying three fourths of an acre; and the pagoda, an octagonal ten-storied building, 163 feet high. Near the northern entrance is the old Kew palace, formerly a favorite residence of George III.

Key, Ellen, was born in Sundsholm, Sweden, December 11, 1849. At home she learned liberal-mindedness. She taught for thirteen years, then made a series of lecture tours. She became an ardent reformer and advocate of woman's emancipation. Nevertheless she decried placing women in business and other positions for which she considered them unfit. Liberal views on love and marriage brought much hostility from the conservative element. In her old age people came from all over to pay her homage, and she became Sweden's most famous living woman. Miss Key wrote about thirty works, among them *Love and Marriage* and *The Woman Movement.* She died April 25, 1926.

Key, Francis Scott, author of *The Star-Spangled Banner,* was born in Frederick County, Md., Aug. 9, 1780. He was educated at St. John's College, Annapolis, and practiced law at Frederick City and Washington. During the British attack on Baltimore in September, 1814, and while detained on the British fleet during the bombardment of Fort McHenry, Key wrote his immortal lyric. The poet died at Baltimore, Md., Jan. 11, 1843.

Key West, Fla., a port of entry and county-seat of Monroe County, Florida, is situated on the island of Key West, 60 miles southwest of Cape Sable. It is a coral island, seven miles long and from two to three wide, and nowhere is more than 11 feet above the sea. There is a good harbor, defended by a casemated brick fort; and the buildings include a custom-house, barracks and a marine hospital. The Methodist Seminary and Holy Name Academy are the principal institutions of learning; the latter was used as a hospital for soldiers during the Spanish-American War. The streets are wide and straight, with street-car lines; most of the houses are built of wood. The exports are salt, turtles, sponges, fruits, vegetables and cigars, which are manufactured here in large quantities. The nearness of dangerous reefs has made the business of salvage of much importance, for although the government has erected two lighthouses in the harbor and others among the islands, every year sees numerous wrecks. The climate is warm and equable, and the place is a favorite resort of consumptives. Key West is connected by rail with the mainland 130 miles distant. Population 19,945. See FLORIDA KEYS.

Khartum (*kär'tōōm'*), the most important town in Egyptian Sudan, situated between the Blue and the White Nile, a short distance above their junction. Khartum is the starting-point and terminus of caravans for the interior, and for a long time was noted for its activity in the slave-trade. It has a melancholy interest from its heroic defense by General Gordon against the superior force of the Mahdi in 1884–85. Two days before the rescuing army reached the place, the city fell, and Gordon was among the slain. Khartum is in railway and telegraphic connection with Cairo, and since December, 1899, the Sudan has been open for traffic. Before the dervish revolt a considerable trade was carried on with Egypt, the exports being gold dust, ostrich feathers, gums, hides and skins. There is an English governor-general at Khartum.

Khedive (*kȧ'dēv'*), **The,** a Turkish name for a king or lord, has been the title of the modern viceroys of Egypt since 1867, when it was given by Sultan Abdul Aziz of Turkey to Ismail Pasha. The office was to be hereditary in the khedive's family. The sultan, however, soon regretted the strength and influence which Ismail derived from the new title; and with British aid Ismail was deposed in 1879. Other khedives of the family of Ismail followed; but in 1882 a quarrel with Britain led to the bombardment of Alexandria and the occupation of Egypt by a British army. For years the khedive was a puppet in British hands, but in 1922, following the proclamation of Egyptian independence, he assumed the title of king.

Khiva (*kē'vȧ*), a khanate of Turkestan in central Asia. It contains about 22,320 square miles, the surface being mostly a sandy desert, with many fertile tracts scattered over it. The population, half of which is Turcoman, is estimated at 800,000. After the Russians entered central Asia there was more or less strife bebetween them and the Khivans. The khan had no power to make treaties with foreign powers without the sanction of Russia. The chief town is Khiva (population about 5,000). The products are chiefly silk and cotton. The Russian possessions in Turkestan declared their independence of Russia during the Revolution of 1917.

Khor'sabad'. See NINEVEH.

Khyber (*kī'bŭr*) **Pass,** the great northern military road between the Punjab and Afghanistan. This pass is a little over 30 miles in length and varies in width from 150 to 20 yards, although in one place it is only about 10 feet wide. Khyber Pass has been the key of the adjacent regions in either direction since the days of Alexander the Great. According to the terms of the treaty of Gandamak, made in 1879, the Anglo-Indian authorities are hereafter to have full control of this pass.

Kiauchau (*kē-ou'chou'*), a Chinese seaport in the province of Shantung, ceded to Germany on a 99 years' lease in January, 1898; area of the protectorate, exclusive of the bay, about 200 square miles, with a population inside the neutral zone of 33,000. It is used by Germany as a fortified dockyard and naval station.

Kick'apoo Indians, a tribe of the Algonquin family, found by French missionaries, toward the close of the 17th century, on Wisconsin River. They took an active part against the settlers during Pontiac's war in 1765. By the treaty of Greenville, on Aug. 3, 1795, they ceded a part of their lands, and a few years afterward made further cessions. Against the warning of General Harrison they joined Tecumseh in 1811, and fought in the battle of Tippecanoe. They are now settled in northeastern Kansas and in Oklahoma.

Kidd, Capt. William, was born about 1650 in Scotland, and is supposed to have been the son of a Covenanting minister. Kidd went early to sea, and highly distinguished himself in privateering against the French in the West Indies. In 1691 he received a reward of $750 from New York city for protecting the colony against pirates. In 1695 a company for the suppression of piracy was organized in England, and the command of the enterprise given to Kidd. In 1696 Kidd set sail for Madagascar, the rendezvous of the pirates. Very soon after rumors reached England that Kidd was playing the game of pirate himself, and orders were issued to the governors of the English colonies to arrest him. After a two years' cruise he returned to the West Indies, and a few months later landed in Boston without securing a safe-conduct. He was arrested and sent to England to be tried for piracy and the murder of one of his men. He was found guilty and hanged at Execution Dock, London, May 24, 1701. Before coming to Boston, Kidd buried a large treasure on Gardiner's island, off Long Island, which, with what was recovered elsewhere, amounted to $70,000. There for a long time was a popular belief that Kidd had buried other treasure along the coast, but, although frequent search was made for such, none was ever found.

Kiel (*kēl*), a seaport in Schleswig-Holstein, Prussia, with a fine harbor, the chief German naval station on the Baltic. The total tonnage, entered and cleared, of the port in one year was 1,170,334 tons. The University of Kiel in 1906 had 117 professors and 1,157 students. Population, 225,000.

Kiev or **Kieff** (*kē'yĕf*), a city of European Russia, on the right bank of the Dnieper. It is connected by rail both with Moscow and Petrograd, and a magnificent bridge spans the Dnieper. Kiev has a large university, founded in 1834 (with 2,326 students), besides other institutions of learning, of which the Greek theological academy is the most liberally endowed. From the 13th to the 17th century Kiev was a Polish city, but was reannexed to Russia in 1667. Population 950,000.

Kilauea (*kē-lou-ā'ä*), a volcano in Hawaii, one of the largest in the world. It is constantly active, and the crater is nearly eight miles in circumference.

Kil'imanja'ro, a name which means great mountain, lies close to the eastern coast of Africa, 175 miles from the equator. The mountain is volcanic, and rises about 19,700 feet, probably the greatest altitude in Africa. The mountain was first ascended, after many unsuccessful attempts, by Hans Meyer, the explorer, in 1889. Dr. Meyer found the higher of the two peaks into which the mountain forks to be crowned by a crater over one mile in diameter. This peak is known as the Kibo, the other as the Kimawensi. On the sides of the mountain is graded the vegetation of all climes. The verdure at the base is tropical; but as the explorer ascends, species after species of plant-life is left behind, until at 14,000 feet there is no more growth. Both summits are crowned with perpetual snow, a fact which scientists for many years refused to believe, owing to the nearness of the equator. Kilimanjaro is an isolated and conspicuous peak rising sheer from the plains.

Killar'ney, a small market town in Kerry County, Ireland, famous from the large number of tourists who visit the lakes near the town. These lakes, three in number, are situated in a basin in the midst of the mountains, some of which rise abruptly from the water's edge and are densely clothed with trees from base to summit. The scenery of Killarney is beautiful and in many respects unique.

Kil'ogram, the arbitrary standard of mass, made of platinum and preserved at the International Metric Bureau at Paris. One one thousandth part of this mass is the *gram,* which is the unit of mass employed in all scientific work. It was the intention to make the gram as nearly as possible equal to the mass of one cubic centimeter of water under standard conditions; but this does not affect the definition of the gram or of the kilogram. It is important to understand that the kilogram is a purely arbitrary unit. One kilogram = 2.2046213 lbs. Mass of one cubic decimeter of water at 4°C = 1.000013 kilograms.

Kim'berley, the capital of Griqualand West, now incorporated in Cape Colony, Africa, is the center of the diamond diggings There are four chief mines, Kimberley, Dutoitspan, De Beers and Bulfontein. On the outbreak of war with Transvaal (October, 1899) the place was invested by the Boers, and Cecil Rhodes, the capitalist, was shut up with a few British and Outlanders in the town. It was gallantly defended by Colonel Kekewich and a small garrison. After a siege of four months the place was relieved by a British force under General French on Feb. 15, 1900. Population, 20,000 (white).

Kin'dergar'ten. The kindergarten is a type of school for children from three to six years of age, too young to go to the graded school. The principles underlying the kindergarten really constitute a great reform movement in education, started about 1840 by Friedrich Froebel of Germany. Froebel conceived education as a development of one's latent powers through spontaneous self-activity rather than as a process of receiving information. He recognized that in his time the period most neglected was that between the ages of three to six when neither parents nor teachers ordinarily gave special attention to the child's development, and he therefore worked out and applied his principles in a course of training for pupils of that age. One of the surest proofs of the soundness of the kindergarten as conceived by Froebel is the fact that its general principles have gradually worked their way up into the grades of our best schools and are being applied there.

The starting point of kindergarten method is the nature of the child, essentially social and active both physically and mentally. Spontaneous outlet for these natural activities is found in the construction of objects calling forth the child's powers of creative imagination, in storytelling, in singing suitable songs, in organized games calling both for co-operation and individuality and similar social activities.

According to reports received from public-school teachers, children who have had kindergarten training are much better informed than other children, better at drawing, constructive and artistic work, quicker to learn, more imaginative, more enthusiastic, less self-conscious, more self-reliant, more helpful and thoughtful of others, more sociable and more sympathetic both to their teacher and their schoolmates.

Most of the kindergartens first established in the United States were private institutions. The kindergarten was first tried as a part of our public-school system in St. Louis about 1873, owing to the influence of W. F. Harris, then superintendent of schools in that city, and kindergarten work is now becoming generally recognized as the first stage of public education.

Kindergarten Growth. The union of kindergartens with primary grades seems an admirable step forward in preparing children for primary work. The number of children between the ages of four to six in the United States is about 4,800,000, of whom about 560,000, or only one-ninth of those entitled to the privilege, are receiving kindergarten education. Recently 31 states reported gains in attendance. Southern states have been particularly active lately in organizing kindergartens. Not numbers, but per cent. of attendance, is the interesting comparative feature among states. Statistics are as follows:

California	32.9	Maryland	5.9
New Jersey	29.1	Louisiana	4.7
New York	28.0	Washington	4.4
Michigan	25.9	Wyoming	4.3
Rhode Island	25.4	Oklahoma	3.6
Connecticut	24.5	South Dakota	3.5
Wisconsin	21.9	Kentucky	3.3
Illinois	19.0	Texas!	2.8
Minnesota	18.9	Florida	2.2
Missouri	17.0	Vermont	2.17
Massachusetts	15.9	Oregon	1.8
Colorado	13.9	North Dakota	1.6
Nebraska	13.8	Virginia	1.5
Indiana	12.2	Alabama	1.43
Iowa	11.9	Delaware	1.38
Ohio	11.7	Georgia	1.37
Nevada	11.66	Tennessee	.9
New Hampshire	11.6	South Carolina	.8
Arizona	9.5	New Mexico	.67
Utah	8.3	Mississippi	.65
Maine	6.6	North Carolina	.63
Pennsylvania	6.3	West Virginia	.3
Montana	6.0	Arkansas	.2
Kansas	5.93	Idaho	.1

Some states have lowered the age of entrance to the regular primary grade instead of, or in addition to, maintaining kindergartens. Connecticut, Delaware, Iowa, Kansas, Maine, Michigan, Minnesota, Mississippi, Nebraska, New Hampshire, New Jersey, and New York have set the age of entry at five years; Wisconsin four; all other states, excepting Texas, six.

Kin′eto=Pho′nograph, an instrument that is the result of several separate inventions of T. A. Edison. The kinetograph is directed to catch photographically the action of the players on a stage, while the phonograph at the same time records their words with the music or any other sounds accompanying the performance. The result is the reproduction of the action and the words of a play or any similar performance, the two being capable of exhibition together at any time afterward. The combined instrument capable of recording words and action simultaneously is one of the most ingenious ever constructed, and was finished by Edison and W. K. L. Dickinson in 1895.

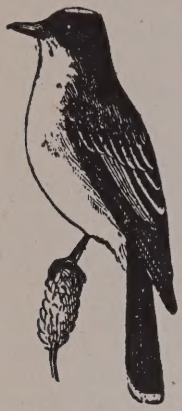
Kinet′oscope, an invention of Edison's in 1894, by which the views taken by the kinetograph are exhibited upon a screen, causing the action of any scene to be reproduced continuously and in proper order and succession, precisely as it was enacted at some previous time.

King of the Golden River, The, is a fairy story told by the Englishman, John Ruskin, to a little girl friend of his, and afterwards published. Three brothers lived in a fertile valley, called Treasure Valley. The two older brothers were hard and cruel, and by their villainy they caused the winds to turn away the rain from the valley, till it became a desert. They did not then repent, but brought on themselves a terrible death in their attempt to secure the golden river. The youngest brother was kind and brave of heart, and gained the love of the King of the Golden River; who then found a way to break through the hills into Treasure Valley and bring fertility and happiness once more with the waters of his river.

King, William Lyon Mackenzie, Canadian economist and statesman, grandson of W. L. Mackenzie (q. v.). He was born at Berlin, Ont., Dec. 17, 1874, and was graduated from the University of Toronto in 1895. In 1900, having already won a high reputation for his investigations of labor problems, he was appointed Deputy Minister of Labor, and in the next few years repeatedly acted as arbitrator in industrial strikes. In 1908 he was elected to the House of Commons as a Liberal, and a year later became Minister of Labor. In 1911 he resigned with the Laurier government and was defeated for reëlection to the House of Commons. From 1914 to 1918 he was director of the Investigation of Industrial Relations for the Rockefeller Foundation. In 1921 he succeeded Arthur Meighen as premier of Canada, being the first Liberal premier since Laurier.

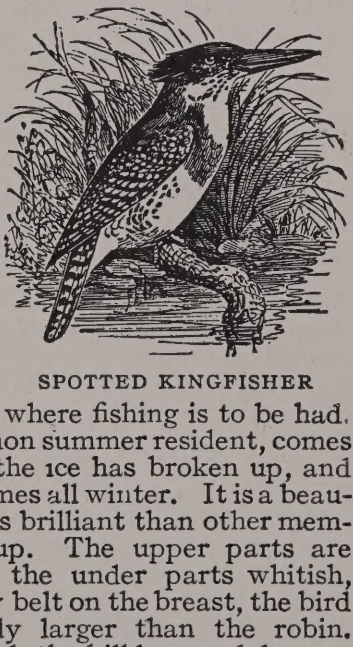
King, William Rufus, an American statesman who in 1852 was elected Democratic vice-president of the United States, was born in North Carolina in 1786, and died in 1853 in Alabama. King was a prime mover in securing the state constitution of Alabama where he had settled as a cotton planter. In 1819 he was chosen one of the first Alabama senators for Congress. In 1844 he was minister to France, charged to persuade France not to join with England in protesting against the admission of Texas into the United States. In 1848 he was senator again, and in 1850 he was chosen unanimously as president of the senate. He died a few weeks after taking the oath of office as vice-president.

King'bird, one of the flycatchers of North America, is about eight and one half inches long, with the upper parts grayish black, the tip of the tail and under parts white. It also has a partly concealed orange-red patch on the crown. It catches insects while on the wing and is often called bee-martin and accused of killing many honey-bees. The examination of the contents of the stomach of a large number of these birds shows, however, that the mischief done in that direction has been greatly overestimated. They devour an immense number of injurious insects and relatively few honey-bees. They feed on beetles and canker-worms, as well as winged insects, and eat some berries. They are distributed generally in this country as far west as the Rockies, are common summer residents, migrate in May and September. They are usually seen in garden or orchard. Their nest is compactly built, made of grasses, weed-stalks and moss, lined with plant-down and other soft material. The three to five eggs are white marked with chocolate. The male shows great bravery in defending the eggs and nestlings from the attacks of the crow and other birds.

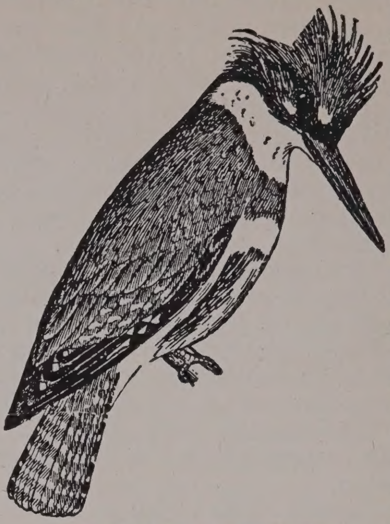


KINGBIRD

King'fisher, a well-known fishing-bird of world-wide distribution. It is more common in the Old World than in the New. Of the 180 known kinds, only eight are inhabitants of the New World and only one is found in the Eastern United States. This bird—the common belted kingfisher—is widely distributed, but is a familiar bird only where fishing is to be had. There it is a common summer resident, comes early, as soon as the ice has broken up, and stays late, sometimes all winter. It is a beautiful bird, but less brilliant than other members of the group. The upper parts are bluish-gray and the under parts whitish, with a bluish-gray belt on the breast, the bird being considerably larger than the robin. The head is crested, the bill long and dagger-like. It is a rapid flyer, but is sometimes seen perched on a post or dead tree near ponds and quiet rivers. It catches fish with dexterity in its strong bill. The kingfishers make nests in holes in the banks, and return year after year to the same place. There are numerous species of these birds, especially in the East Indies. The true kingfishers are closely related to the halcyons or wood kingfishers, famous in classical literature. There was an old fable to the effect that their nests floated on the water, and they were supposed to breed during the halcyon days—a period of 14 days—seven days preceding and seven days following the shortest day of the year. During these days, according to the old superstition, calm weather prevailed on the seas. See Blanchan: *Bird Neighbors.*



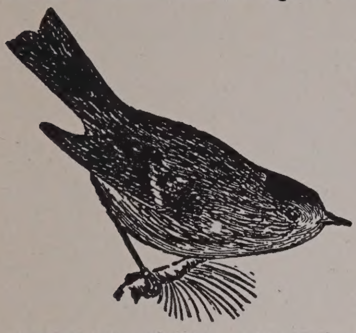
SPOTTED KINGFISHER



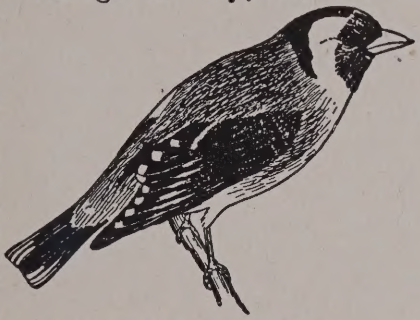
BELTED KINGFISHER

King Lear, a tragedy, was written by Shakespeare probably between 1603 and 1606. It is based on an ancient legend which had come down, probably, from the ancient Britons, and was told by Geoffrey of Monmouth about 1150 and by Layamon about 1200. Edmund Spenser, also, had touched on the story, and it had even been dramatized. But it is greatly transformed by Shakespeare's hand. The story is that of an old king, who, as he gets feeble, turns to his children for affection. But, because he has all his life been used to rule and to get things more by fear than for love, he demands this affection from his daughters and lets them know that whoever expresses her love most strongly will secure the best reward. He accepts as true the violent expressions of love that his two elder daughters offer; while he is enraged beyond measure by the constrained silence of his youngest child, Cordelia. He therefore divides his kingdom between the former, and proposes to live with them in turn; while Cordelia he turns away penniless. But the king of France, who was present, sees Cordelia's goodness and weds her. Then the elder daughters tire of the king who has no more to give and, as his protests become troublesome, turn him out of doors into the storm. The French king then comes with Cordelia and an army to right King Lear. They find him broken in mind and body; but under the love of Cordelia he regains something of his reason. But the English defeat the French king, and capture Lear and Cordelia. The order is given that both be slain. But at this point one sister poisons the other, because both have fallen in love with the same man. This crime is discovered, and at the same time the intention of killing Lear and Cordelia is revealed. The order for their death is countermanded, but Cordelia has been slain; and the old king dies brokenhearted, his dead child in his arms.

King'lets are tiny, gray-green, active birds with brilliant spot on crown and with power of song out of all proportion to their size. The ruby-crowned kinglet is distributed throughout North America, breeds in the far north, and is seen chiefly in fall, winter and early spring. The call-note is thin, and gives no hint of the rich melody of the song. Though so tiny, the bird is not shy, seldom allows an intruder to interrupt it in its business of hunting for insects and larvæ, in which it seems constantly at work. It is considerably smaller than the English sparrow, olive-green above, light yellowish-gray below, wing-bars whitish. It builds in evergreen forests, its nest surprisingly large, woven of moss, plant-fiber, and strips of fiber and lined with soft, warm material. The golden-crowned kinglet seldom keeps still long enough to allow the observer opportunity to study it in detail. But two of our birds are smaller, the humming-bird and the winter-wren. Its range is North America generally. See Blanchan's *Bird Neighbors.*



RUBY-CROWNED KINGLET



SITKAN KINGLET

Kings'ley, Charles, an English clergyman and author, was born on June 12, 1819. He graduated at Cambridge in 1842 with high honors, and two years later became the rector of Eversley, in Hampshire, where he remained until his death. Kingsley attained a world-wide fame both as preacher and writer. He threw himself with the greatest zeal and energy into various schemes for the improvement of the English working-classes, and in 1849 published two novels, *Alton Locke* and *Yeast*, both of which dealt with modern social questions in a bold and original manner. The influence of these books at the time of their publication was a great one, and caused the name of Christian Socialist to be applied to Kingsley. In 1853 he published *Hypatia*, a brilliant picture of Christianity in the fifth century in conflict with Greek philosophy. *Hereward the Wake*, which appeared in 1866, was his last novel. His other important works include the novels *Westward Ho* and *Two Years Ago*, and the charming fairy tale, *The Water Babies*, together with a volume of poems and one embracing *Prose Idylls.* His death occurred on Jan. 23, 1875. See his *Life* by his widow.

King's Mountain, a range in North Carolina, some 16 miles in length, the southern extremity of which is in York County, South Carolina. Near this southern extremity British soldiers under Lieutenant-Colonel Ferguson were attacked by American militia under the command of Colonel Benjamin Cleaveland on Oct. 7, 1780, and after a desperate resistance were nearly all taken prisoners. This victory contributed in no small measure to the final success of the Revolutionary army.

King'ston, Rt. Hon. Charles Cameron, P. C., premier and attorney-general of South Australia and minister of trade and commerce in the Barton cabinet (Australian commonwealth), was born at Adelaide, South Australia, in 1850. He is an advanced Liberal in politics, and has represented West Adelaide in the local assembly since 1881, and has repeatedly held office. In 1897–98 he was president of the national Australasian federal convention which sat successively at Adelaide, Sydney and Melbourne and framed the bill to establish the Australian commonwealth.

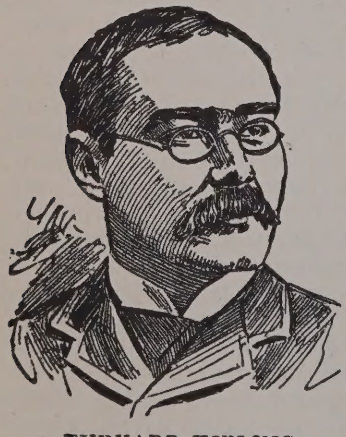
Kingston, a city of Ontario, Canada (population 19,000), is situated at the head of the Thousand Islands of the St. Lawrence River. Lake and river steamships call daily. The Grand Trunk and Canadian Pacific Railways reach it. Historically the city is of great interest, since it shared the earliest settlement of the province. Count Frontenac's guard 234 years ago watched over his camp where the city now stands. This historic ground is part of La Salle's seigneury which was granted to him by the king of France. He built a fort near by, which stood the ravages of time from 1677 to 1820. Kingston is closely associated with the history of the great explorer. Fort Frontenac was built to secure the traffic for French merchants and make it easy to extend New France westwards. In 1751 the first armed vessel on Lake Ontario was built at Fort Frontenac. The dream of La Salle was never realized. In 1841 Lord Sydenham selected Kingston as the capital of the united province of upper and lower Canada. He opened the first Parliament of united Canada in that year in Kingston. Kingston held the honor of being the capital city for three years only. In the manufacture of locomotives, cars, steam engines and agricultural implements

Kingston holds a high place. Its educational advantages are excellent. Queens University and Kingston School of Mining are institutions of first importance. The university prospered greatly under the presidency of the Reverend George M. Grant, and that prosperity continues under the guidance of President Gordon, D. D. Queens has given many prominent men to Canada.

Kingston, the commercial and political capital of the island of Jamaica, stands on the northern side of one of the best harbors in the world. It was founded in 1693–1703 after the town of Port Royal, six miles distant, had been destroyed by an earthquake. Kingston suffered from a severe earthquake Jan. 14, 1907, which destroyed 1,100 lives, 6,000 buildings and caused a property loss of $25,000,000. Population about 50,000.

Kingston, N. Y., county-seat of Ulster County, stands on the right bank of the Hudson, 54 miles south of Albany and 88 north of New York. It is a railroad and canal terminus, and is the center of an extensive transit trade by steamer. Beside being the terminus of the Ontario and Western, Ulster and Delaware and Wallkill Valley railroads, Kingston may be reached by the West Shore or by the N. Y. C. and H. R. railroad. Enormous quantities of bluestone "flag" are forwarded from Kingston, which also is the center of the hydraulic cement business, and contains foundries, brickyards, cigar-factories, shirt-factories and other manufactories. Population, 25,908.

Kio'to or **Kyoto** is a city of Japan on the island of Hondo or Honshu. It is an inland city, and owes its present importance chiefly to the large number of religious shrines it contains, to the many forms of art that are produced there in the highest excellence and to the Imperial University. In 1908 its population was 442,462, and it is increasing in size. From 794 to 1868 it was the capital of Japan, losing this distinction with the fall of the shogunate and the rise of new Japan.



RUDYARD KIPLING

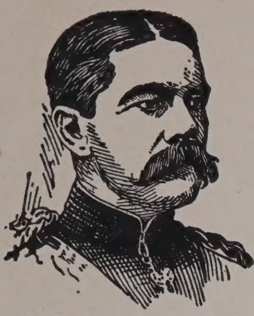
Kip'ling, Rudyard, an author of wide celebrity, was born at Bombay, India, in 1865, his father being in the English civil service. He was educated in England and, returning to India, became assistant-editor of the *Lahore Gazette*, and later filled a like post on the Allahabad *Pioneer*, to both of which he contributed many of his interesting sketches of Anglo-Indian life. His *Plain Tales from the Hills* (1888), followed by *Soldiers Three*, *The Seven Seas*, *Barrack-Room Ballads*, *The Light that Failed*, *Departmental Ditties*, *Captains Courageous*, *Phantom Rickshaw*, *Under the Deodars* and *In Black and White*, made him known as a writer of masterly short stories and brilliant verse. He married an American, Miss Balestier, of Brattleboro, Vt., where he lived for a time. He has since traveled extensively in China and Japan, in South Africa and in Australasia, and on his return from the scenes of the Boer war he resumed his residence in England, at Rottingdean, near Brighton. His writings grow apace, and are received with increasing favor by those who recognize his versatile genius. Especially is he admired throughout the British empire by those who value his militant patriotism, and see in him the uncrowned laureate of the empire. In his *Recessional* and *McAndrew's Hymn* Kipling touched a deeper note than in his novels, as also in some of his other poems and more thoughtful verse. Among his recent notable works are *The Day's Work*, *Kim*, *The Jungle Books*, *Wee Willie Winkie* and *Puck of Pook's Hill*.

Kirchhoff (*kĭrk'hŏf*), **Gustav Robert,** a distinguished German mathematical physicist, was born at Königsberg, Prussia, in 1824. He began teaching at Berlin in 1848, but in 1850 was called to Breslau to an extraordinary professorship. In 1854 he accepted the professorship of physics at the University of Heidelberg, where, in 1859, in conjunction with Bunsen (*q. v.*) he published his epoch-making paper on spectrum analysis. Besides this, his most important work, perhaps, is his determination of resistance in absolute measure, his discovery of the laws governing the distribution of electric currents in a network of conductors and his mathematical papers on elasticity and optics. In 1870 he was called to Berlin. He died at Berlin, Oct. 17, 1887. See *Life* by Boltzmann.

Kirkpatrick, Sir George Airey, was born in Kingston, of Irish parentage, in 1841. He graduated from Trinity College, Dublin. At one time he was president of the Canada Locomotive Works and the Dominion Rifle Association. He was first elected to the House of Commons in 1872, was re-elected several times, and was elected speaker in 1883. Later he was appointed lieutenant-governor of Ontario, and his term was extended because of his acceptable services. He died in 1889.

Kitch'ener, Lord Horatio Herbert, an English soldier, was born in 1850, educated at the Royal Military Academy at Woolwich, and entered the British army (the Royal Engineers) in 1871. In 1882 he served as major of cavalry in the Egyptian army, was with the Nile expedition in 1884, and was made governor of Suakim in 1886. For service in Sudan campaigns he was made

Companion of the Bath. In 1888 he was made adjutant-general in the khedival or Egyptian army, and held that position until 1892. In the latter part of that year he was appointed *sirdar*. He commanded at the taking of Dongola in 1896, and was then made K. C. B. In August, 1898, he was in command of an English and Egyptian army near Omdurman, opposite the site of Khartum. Opposed was a force of dervishes numbering about 50,000, Kitchener's force being about half that number. This dervish army opened the attack on Sept. 2, 1898, and the defeat resulting was among the most remarkable in modern history. For this victory the general was given a peerage as Baron Kitchener of Khartum and Aspall. He rendered conspicuous service in the Boer War and as war secretary in the European conflict. He was drowned in the sinking of the Hampshire, June 5, 1916.


HORATIO H. KITCHENER.

Kite, a bird of prey, a member of the same family as the hawk and eagle. The swallow-tailed kite appears to spend all its waking hours in flight or sailing in the air; it feeds, drinks, woos and, it is thought, sleeps while in motion. No bird that soars is more graceful, its flight being so easy as to appear mere floating. Whether rising, diving, wheeling or skimming low above the surface, every movement is sure and beautiful. The bird is seldom seen walking, for its legs are short and scarcely visible. It is about 24 inches long, its spread of wings four feet, its plumage glossy black, the head, neck, under part and band low on back snowy white, tail long and cleft like a swallow's. It usually winters south of the United States, comes north in April and returns south in October. It is more common in the western gulf states and the region north of our great plains. It feeds largely on snakes, lizards, grasshoppers, locusts and crickets.

Kites. Kites until very recent times were a toy used exclusively by children, and were of two or three easily-constructed conventional forms. Since 1880 many attempts have been made to use them for scientific and advertising purposes, and under repeated experiments the forms have changed. One of these newer forms consists of an oblong box, open at both ends, constructed of light material and raised by the suction of the wind. Several differing forms have been invented during recent years, besides that above mentioned. The incentive is not amusement, but a desire to use kites of strong lifting power to carry instruments into the upper strata of the air for scientific observation and record and for making photographs.

Kla'maths, Indians living on the Klamath lakes in California and southern Oregon. In connection with the Modocs, Shastas, Cahwes, Hoopahs, Wallies, Tolewahs and other tribes, they often are called Digger Indians; but the Klamaths proper are far superior to the tribes with which they are often classified. In 1864 they ceded all their lands to the United States, except about 1,200 square miles, where they engage in agriculture and lumbering.

Klon'dike, the name first of a river and later of a gold-mining region in Yukon Territory, northwestern Canada. The name became suddenly famous in the autumn of 1897, because of the discovery of very rich placer gold-diggings earlier in that year by Geo. McCormick with a companion named Henderson. Great excitement followed this new discovery, many thousands of persons going to the region during the spring of 1897 and later. Since that date excitement has subsided, but the gold-fields have been indefinitely extended in various directions in the Klondike and in Alaska by new discoveries. The gold is found in frozen gravel-beds, which are covered with muck to a depth of from 10 to 25 feet, and all frozen solid. The work of the mines is thus very difficult and laborious. The chief city is Dawson, on the Yukon, north of the mouth of the Klondike, which has a population of 30,000. Yukon Territory has an area of close upon 200,000 square miles.

Klop'stock, Friedrich Gottlieb, a German poet, was born July 2, 1724, at Quedlinburg. Having read Vergil's *Æneid* and Milton's *Paradise Lost*, he resolved, when quite young, to write a German epic poem, selecting *The Messiah* as his theme. The first three cantos of this poem appeared in the year 1748. They attracted great attention, and caused Klopstock to be regarded as a religious poet of the highest order. The remaining cantos were published at Halle in 1773. Odes, tragedies and biblical dramas, with some hymns, constitute the remainder of his works. He died at Hamburg, March 14, 1803. See *Life* by Muncker.

Knight'hood. Our word *knight* is derived from the Anglo-Saxon word *cniht*, which first meant a boy or youth and afterward a servant or attendant. It was at length restricted to the military attendants upon nobles and officers of state. Under the feudal system, this relation was made binding and permanent by the relation of tenancy in which the knight held land on the condition of rendering service to his superior whenever called upon. Knighthood as a feudal institution was established in England by the Norman kings. The whole system of knighthood was abolished in the reign of Charles II. The history of knighthood, as a voluntary institution, began with the crusades. During these wars for the recovery of the Holy Land, the younger sons of many families enlisted under the banners of wealthy nobles; and it was not long until knighthood, won by military service, was esteemed more honorable than that which attached to the holding of land. The age of knighthood or chivalry may be said to have extended from the time of the crusades to the end of the Wars of the Roses, a period of nearly 400 years. Although knighthood originally was a purely military distinction in the 10th century, it came to be conferred on civilians as a reward for valuable services rendered to the crown or to the state. The first civil knight in England was Sir William Walworth, who won his title by slaying Wat Tyler in the presence of King Richard II in 1381. Since the abolition of knight-service, knighthood has been conferred as a mark of the sovereign's esteem, and in recent times it has been conferred as often on civil officers, scholars, lawyers, physicians and artists as on soldiers. See Grose's *Military Antiquities;* Nicolas' *British Orders of Knighthood;* and Hallam's *The Middle Ages.*

Knights of Labor. See LABOR ORGANIZATIONS.

Knights of Rhodes. See MALTA, KNIGHTS OF.

Knights of St. John. See MALTA, KNIGHTS OF.

Knights Templars. See TEMPLARS.

Knitting-Machines were invented in their simplest form, known as the stocking-frame, as early as the 16th century, by Lee of Nottingham, England. All knitting-machines were worked by hand until the 19th century. During the 19th century, however, over 2,000 patents in knitting-machinery were taken out in the United States alone. There are about 100,000 knitting-machines in use in the United States, most of them being circular and each having a series of needles arranged vertically and parallel to one another, inside a vertical cylinder which raises and lowers them with great rapidity. Knitting-machines are adapted to cotton and even silk fabrics as well as woolens.

Knox College, located at Galesburg, Ill., is one of the oldest institutions in the central west, having been chartered in 1837. It is co-educational, and has a faculty of 32 and an attendance of 750 students, including those registered in the conservatory of music. The college has productive funds to the amount, so far, of $500,000 and an income of close upon $75,000. It has a library of about 9,000 volumes.

Knox College of Toronto, Canada, was founded by the (Free) Presbyterian Church of Canada in 1844. The Rev. Dr. Burns took a leading part. The Rev. Michael Willis, a man of great learning, was its first principal. He filled the chair of systematic theology from 1847 to 1870. The college for 20 years occupied premises in which Lord Elgin, governor-general of Canada, had resided. For some years there existed an arts department. The majority of students take the complete arts course in the University of Toronto. In 1885 the college was affiliated with the university, and it was federated with it under the federation act of 1890, thereby being constituted an integral portion of the University of Toronto. The college has 750 graduates. The endowments amount to $300,000.

Knox, Henry, an American soldier who highly distinguished himself during the Revolutionary War, was born at Boston, July 25, 1750. He received a good common-school education, and gave considerable attention to military tactics during his boyhood. He participated in the battle of Bunker Hill as a volunteer aid to General Ward, secretly making his way out of Boston for that purpose. During the siege of Boston he attracted Washington's attention by his skill in fortification. He took part in the battles of Trenton and Princeton, and was soon after chosen by Congress as brigadier-general of artillery, in which capacity he served with honor and distinction till the close of the war. General Knox stood high in Washington's confidence, and after the surrender of Cornwallis at Yorktown he was made major-general and placed in command at West Point. When Washington became president, Knox was appointed secretary of war, a position in which he exhibited the same faithfulness and efficiency he had always exhibited as a soldier. He died at Thomaston, Me., where he had a large landed estate, on Oct. 25, 1806.

Knox, John, the great Scottish preacher and reformer, was born at Giffordgate, a suburb of Haddington, on Nov. 24, 1505. He received his early education at the grammar-school of his native town, and in 1522 was sent to the University of Glasgow, but left without taking the degree of master of arts. Knox became acquainted with George Wishart, who had lately returned from travel in England and Germany with an ardent zeal to gain Scotland to the reformation. From this time Knox devoted himself with an earnestness and intensity never surpassed to establishing in Scotland what he deemed a church based on the teachings of Christ and his apostles.

In 1546 he preached to the Protestants who, after the assassination of Cardinal Beaton, had taken refuge in the castle of St. Andrew, and on the surrender of the castle, Knox, who had no part in the assassination, was sent, with others, a prisoner on board the French galleys. For nearly two years Knox remained a captive, but in February, 1549, at the solicitation of Edward VI, he was set at liberty. As it was unsafe to return to Scotland, he remained in England for four years, and on the accession of Mary in 1543 he had to seek refuge on the continent; but in September, 1555, he ventured into Scotland, where he remained until August, 1556, after which he returned to Geneva and preached there during the two following years. In May, 1559, Knox returned to Scotland, where he continued to be the life and soul of the reforming party until his death. The arrival of the young queen, Mary, in 1561 revived all the old dissensions. Mary's opinions on religious and political questions directly opposed those held by Knox and the party he represented, and all interviews and discussions between the young queen and the ardent reformer only widened the breach between them. At the coronation of the infant James VI in 1567 and at the opening of Parliament Knox preached in that strain which gave his sermons the force and character of public manifestoes. He made his last public appearance at the induction of his successor in St. Giles Cathedral, Edinburgh, in November, 1572, and died a few days later. Carlyle says of Knox: "A most clear-cut, hardy, distinct and effective man, fearing God without any other fear. There is in Knox throughout the spirit of an old Hebrew prophet — a spirit almost altogether unique among modern men. He is a heaven-inspired seer and heroic leader of men." See McCrie's *Life of Knox* and Thomas Carlyle's *Heroes and Hero-Worship.*

Knox, Philander Chase, was born in Brownsville, Fayette County, Penna., May 6, 1853. After attending the University of Virginia, he graduated from Mount Union College of Alliance, Ohio, in 1872. He was admitted to the Pennsylvania bar in 1875 and was the same year appointed district-attorney for the western district. He resigned next year, and later became celebrated as a lawyer in the service of the great corporations. He was appointed attorney-general of the United States by President McKinley on April 9, 1901. On McKinley's death he continued to serve under President Roosevelt, and prosecuted the celebrated suit to dissolve the Northern Securities Company in 1903. He resigned in 1904.

Knox'ville, a city of Tennessee in Knox County, is one of the oldest cities in the state and was the first capital. It stands amid picturesque scenery on Tennessee River, at the head of steamboat navigation, 165 miles east of Nashville. The city is served by the Southern Railroad and the Louisville and Nashville, and is the distributing point for the products of the surrounding fertile section. Among its industries those of greatest importance are woolen and cotton factories, flourmills and marbleworks, while it also manufactures coffins and caskets, furniture, desks, cabinet mantels, ready-made clothing, iron fencing and boilers. Here are the state's university, the agricultural college, the state school for deaf mutes, an industrial school for colored pupils, Knoxville College (United Presbyterian) and a handsome postoffice of marble. Knoxville figured prominently in the Civil War, being assaulted and besieged by Longstreet, while the city for a time was occupied by 12,000 Federal troops under General Burnside. Population 125,000, a gain of about 35,000 in the past decade.

Kobe (*kō'bâ*) is a town in Japan lying only one hour by rail from Osaka, being continuous with the city of Hiogo, of which it, as it were, forms the European and trading section. Kobe has a larger volume of shipping trade than any other port of Japan, 75 per cent. of the vessels which enter being British. Hiogo and Kobe together have a population of 750,000; and this is rapidly growing in numbers, owing to the lead taken by Kobe in trade at the expense of the older ports of Nagasaki and Yokohama.

Koch, Dr. Robert, a distinguished German physician and student of bacteria in their relation to diseases. He is widely known for his investigations on the disease germs of consumption and cholera. He was born at Klausthal, Hannover, in 1843, and took his M. D. from Göttingen in 1866. In 1882 he announced the discovery of the disease germ (*Bacillus tuberculosis*) which produces tuberculosis or consumption of the lungs. The following year he was sent by his government to Egypt and India to study into the cause and prevention of cholera. While in Calcutta, he discovered the comma bacillus, which is the disease germ of cholera. In 1890 he proposed the injection of a lymph into the body to combat the germs of tuberculosis, and great hopes were entertained for this method of treatment. Several years are required to complete the treatment, and it has not been successful. Dr. Koch is on the medical faculty of the University of Berlin, and engaged in the Institute of Hygiene.

Kohinur (*kō'ĭ-nŏŏr'*), a very valuable diamond which was in the possession of monarchs of India for centuries, and was owned by the late Queen Victoria. It is called the mountain of light, and is worth about $600,000.

Kohl'rausch, Friedrich, an eminent German physicist, son of Rudolf Kohlrausch, also distinguished as a physicist. He was born in 1840 at Rinteln in Germany, and is now director of the National Physical Laboratory at Charlottenburg. He was educated at the Universities of Marburg, Erlangen and Göttingen. He taught successively at Göttingen, Zürich, Darmstadt, Würzburg and Strassburg. In 1894 he succeeded Helmholtz as director of the Laboratory. His most important work is that which he did upon the electrical conductivity of liquids. His laboratory manual of physics, which has been translated into four different languages, has exercised a marked influence on the laboratory method of teaching physics on both sides of the Atlantic.

Ko′komo, Ind., the capital of Howard County, an important railway center on Wildcat River in central Indiana, 54 miles north of Indianapolis. Three railroad lines and three interurban lines traverse the city and the county, which is a productive one in an agricultural sense and largely devoted to stockraising and lumbering. The region is productive also of natural gas. It has thriving industries and manufactures and good educational institutions, churches and public buildings. Population 40,000

Kolt′sof-Masal′ski, Princess, was a celebrated Rumanian writer. She was born at Bucharest in 1828, her maiden-name being Helen Ghike, and became a student of literature and language. When 15 she translated the *Iliad* into German. She traveled extensively throughout Europe from 1841 to 1848, and on her return married the Russian Prince Koltsof-Masalski and went to Russia to live, later to Italy and Switzerland. She became well known through her articles in magazines, and published a number of works. Her pen-name was Dora d'Istria. In 1867 the Greek legislature adopted her as a Greek citizen; and she was made a member of learned societies in Europe. She died at Florence on Nov. 17, 1888. Her principal works are *Monastic Life in the Oriental Church, The Heroes of Rumania, Women in the Orient, On Women by a Woman.*

Komura, Baron Jutaro, was born in 1854 in the province of Hiuja, a *samurai.* When 16 years old he met Dr. Griffis and other American teachers, with whom he studied during the next four years. He came to America at the time of the Centennial Exposition (1876), and stayed to study at Harvard, of which he is the first Japanese graduate. He saw diplomatic service in Korea in 1895, was then appointed Japanese minister at St. Petersburg and later at Washington, where he remained till 1900. He then served as minister at Pekin during the Boxer rebellion, and conducted the Japanese negotiations during the conference of the powers at Pekin, with credit to himself and his country. In 1901 he was appointed foreign minister, and had charge of the difficult negotiations with Russia concerning the evacuation of Manchuria. In 1902 he was made a baron. When President Roosevelt prevailed on the Japanese and Russians to meet at Portsmouth, N. H., it was Komura that the Japanese matched against De Witte, the Russian diplomatist. Komura was largely responsible, it is believed, for the peaceful outcome of the conference and the many real advantages the Japanese secured by the peace of Portsmouth. In person Komura is small and slight. His manner is reserved and gentle.

Kong Mountains, a range of mountainous uplands in western Africa, commencing 200 miles from the Gulf of Guinea. The height is less than a mile, and little is known about them. The people inhabiting the district are Mohammedans; the town of Kong is noted for its manufacture of cotton cloth.

Kongo. See CONGO.

Königgratz (*kĕ′nĭg-grâts′*), a town on the Elbe, 75 miles from Prague. A signal victory was gained here by the Prussians over the Austrians on July 3, 1866. The Austrians named the battle *Sadowa,* from an adjoining village near the battlefield.

Königsberg (*kĕ′nĭgs-bĕrg*), a city in eastern Prussia, is situated on both sides of Pregel River, 360 miles from Berlin. In the castle's chapel (built in 1592) Frederick I had himself crowned king of Prussia and William I was crowned in 1861. The university at Königsberg was founded as a Lutheran institution in 1544 and rebuilt in 1844–65. In 1907 the students numbered 1,080 and official teachers 148. Königsberg was first fortified in 1626, and was made a modern fortress of the first class in 1843 and the following years. Kant the philosopher taught in the university for nearly 50 years. Population 245,853.

Koordistan (*kōōr′dĭs-tän′*) or **Kurdistan,** a region of western Persia and eastern Turkey, adjacent to Armenia, comprising nearly 50,000 square miles. The number of inhabitants is estimated at 3,000,000, most of whom are Kurds. Although orthodox Mohammedans in religion, the Kurds have a different language from the Turks, and they differ from the heterodox Persians in religion; thus they are in a state of chronic warfare with the powers. They have the reputation of being wild and lawless and inclined to rob and plunder whenever they have the opportunity; but they are not generally either fanatical or cruel. They are naturally brave and hospitable, and possess crude feelings of honor.

Koot′enay, Kootenai or **Cootenai.** The name of a tribe of American Indians. They numbered about 1,000 in 1890, and are remarkable as having a language indicating a distinct stock among the aboriginal tribes of the United States. These Indians are now found mainly in British Columbia, although there also are small numbers of them living in Washington, Idaho and Montana. They are peaceful, and engage in rude agriculture as well as hunting and fishing. A portion are Christians nominally, while the remainder are sun-worshipers. An account of the ethnology, mythology, physical characteristics and language of the Kootenays, by A. F. Chamberlain, will be found in the report of the British Association for 1892.

Kootenay District or **The Kootenay** forms the southeastern portion of British Columbia west of the summit of the Rocky Mountains, and is drained by Columbia and Kootenay Rivers. Eastern Kootenay contains a large extent of agricultural land, much of which requires irrigation, but is suited to fruitgrowing and all kinds of grain and vegetables. Most of the land is well-timbered and lumbering, next to mining, is the principal industry There are considerable areas of fertile land in western Kootenay, a good deal of which is utilized for fruit-growing. The fame of the Kootenay mines is world-wide, the mountains being rich in gold, silver, copper and lead, and the eastern valleys are underlaid with coal and petroleum. British Columbia mining has reached its highest development in Kootenay, and as a consequence many prosperous cities and towns have been established. The development of the Crow's Nest coalfields and the revival in metalliferous mining caused a rapid increase in population, especially in eastern Kootenay, where it is estimated to have more than doubled since 1901.

Koran (*kō′ran* or *kō-rän′*), the sacred book of Mohammed and the foundation of Mohammedan literature. The word is derived from the Arabic *karaa*, to read, so that Koran means the Reading or the book to be read. It is divided into 114 suras or chapters, each of which bears a title indicating the nature of its contents, though occasionally the title is merely some word which occurs in the chapter. The Koran was dictated to Mohammed at different times during 23 years at Mecca and at Medina, either by the angel Gabriel in human shape, "with the sound of bells," or by God himself, veiled and unveiled, "in waking or in dreams of the night." The original fragments were written without any special order or arrangement, and many have been entirely lost. A year after Mohammed's death the scattered portions were collected by the prophet's scribe and copied without any attempt to reduce them to order or sequence, with all the variations, repetitions and gaps. This volume was intrusted to the keeping of Hafza, the daughter of Omar and one of the prophet's wives. In the 30th year of the Hegira (A. D. 650), Caliph Othman ordered new copies to be made from the original fragments, and all the old copies were burned.

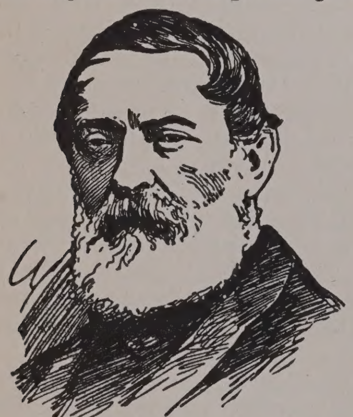
The chief doctrines laid down in the Koran are that there are one God, one true religion and a day of judgment. When mankind at different times forsook the path of truth, God sent prophets — Moses, Jesus and Mohammed being the principal ones — to lead them back into the right way. The doctrine of the divine sovereignty is carried almost to the verge of fatalism, and submission to the will of Allah is emphasized as the highest virtue of which man is capable Mohammedans everywhere hold the Koran in the highest reverence. It is never held below the girdle, never touched without previous purification, an injunction to that effect being generally found on the cover. It is consulted on all weighty and important questions, and nothing is more hateful in the eyes of a Moslem than to see the book in the hands of an unbeliever.

Kordofan′. See EGYPT and SUDAN.

Kore′a, known also as Chosen (Dawn-Land) and The Hermit Nation, once an Asiatic empire, is chiefly situated on a peninsula lying between the Yellow Sea and the Sea of Japan. It is separated from the Japanese islands by the Strait of Korea. The eastern coast is high, while the southern and western shores are low, with many inlets and islands. Port Lazaref is a fine harbor, which the Russians would have liked to get possession of. Until 1894 China was the suzerain of Korea, but, as the result of the war between China and Japan, the latter stepped into China's rôle, though the country was nominally independent. Russia was keen to get control; but the Japanese fought the great Muscovite power (1904–5) and did not permit her to get possession of the country. Foreign commerce was carried on through the three treaty ports of Chemulpo, Fusan and Yuensan, the bulk of the trade being with Japan. Its chief products, besides ginseng and rice, are millet, cotton, hemp and tobacco. Korea is quite mountainous. It is in the same latitude as Italy, and, like it, is shut in on the north by mountains; while a chain crosses the country from north to south. Its largest river is the Yalu or Am-nok. Iron, copper and gold are found; grass-woven mats, paper and silk are manufactured; and most of the trade is with Japan. Coin has just come into use, taking the place of gold-dust and silk, which were always used in barter. Most of the houses are mud huts thatched with straw. Korea until lately was a closed country. Japan first secured a treaty with Korea in 1876. Treaties were made with China and the United States in 1882, with Germany and Great Britain in 1883 and later with other nations, and three ports were opened to foreign commerce. There are over 600 miles of railway and 2,170 of telegraph. Conflicting claims to regulate affairs in Korea led to war between Japan and China in 1894. Since 1904 it has become a dependency of Japan Christian missions have had wonderful success. The capital, Seoul, has a population of 278,958. Korea's is estimated at 13,125,027; its area at 86,000 square miles.

Kosciusko (*kŏs-sĭ-ŭs′kō*), **Thaddeus,** a Polish general and patriot, was born in Lithuania, Feb 12, 1746. He chose the profession of arms at an early age, and received his military training in France. On his return to Poland he received a captain's commission; but in 1777 he came to America and participated in the Revolutionary War, in which he rose to the rank of brigadier-general. When Russia assailed Poland in 1792, Kosciusko held a position at Dubienka for five days with only 4,000 men against 18,000 Russians, and after King Stanislaus surrendered to Empress Catherine he retired to Leipsic. At the rising of 1794, Kosciusko was appointed dictator and commander-in-chief. His defeat of a greatly superior force of Russians at Raclawice was followed by a rising of the Poles in Warsaw. He established a provisional government and took the field against the Prussians; but, as their force was three times as large, he was defeated and fell back to Warsaw, which he successfully defended against the Prussian and the Russian forces, and compelled them to raise the siege. But, finding that two additional Russian armies were marching against him, he reorganized his army and went out to check their progress. Being overwhelmed by superior numbers, he was defeated and taken prisoner at the battle of Maciejowice on Oct. 10, 1794. He was kept in rigorous confinement in St. Petersburg till the death of Empress Catherine two years later when Emperor Paul restored him to liberty with many marks of esteem. Being offered a sword by Paul, he replied: "I have no need of a sword; I have no country to defend." In 1797 Kosciusko again visited the United States, where he was received with high honor and distinction on account of the services he had rendered in the War of Independence; and a grant of land was obtained from Congress in addition to the annual pension previously allowed him. The remainder of his life was spent in France and in Switzerland, where he gave himself mainly to agricultural pursuits. He was killed at Solothurn, Switzerland, Oct. 17, 1817, by the fall of his horse over a precipice. See biographies by Michelet and by Falkenstein.

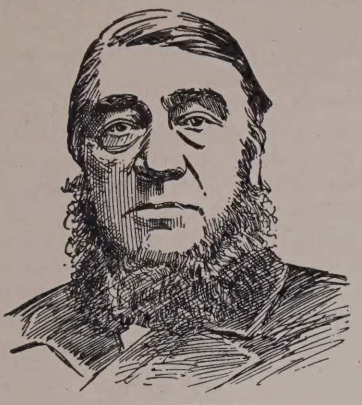
Kossuth (*kosh′o͝ot* or *kŏs-so͞oth′*), **Louis,** a distinguished Hungarian patriot, was born at Monok in Hungary, on April 27, 1802. He studied law at Sarospatok, and commenced his political career at the Diet of Presburg in 1832 as the proxy of a member and as editor of a journal. He afterwards published a lithographed paper, which led in May, 1837, to his receiving a sentence of four years' imprisonment. He was liberated in 1840, and became editor of the *Pesti Hirlap*, in which he advocated the most liberal views and obtained a strong hold on the young men of the country. In 1847 Kossuth was sent to the Diet, and soon became leader of the opposition. He advocated the freedom of the press and the abolition of all feudal privileges, and after the Revolution of 1848 in France he demanded an independent government for Hungary. (See AUSTRIA.) In April, 1849, he induced the national assembly to declare that the Hapsburg dynasty had forfeited the throne, and was appointed provisional governor. Kossuth made a desperate effort to secure independence; but his struggles were in vain; and after the defeat of Temesvan he resigned in favor of Gorgei, who two days later surrendered to the Russians. Kossuth was then compelled to flee into Turkey. Austria and Russia both demanded his extradition, but the Porte refused to comply, and in 1857 he was liberated through the influence of England and the United States. In America and England he was received with every mark of sympathy and respect. In 1851-52 he once more visited the United States, and was greeted with unbounded enthusiasm. He addressed large assemblages in behalf of Hungarian independence; but his eloquence brought no substantial result, in spite of the general sympathy for himself and his cause. He returned to England in 1852, where he remained most of the time till 1859, when the war between France and Austria revived his dream of Hungarian independence; but all his hopes were disappointed when peace was concluded between the two empires at Villafranca. When Déak affected the reconciliation of Hungary with the dynasty (1867), Kossuth refused to avail himself of the general amnesty or to return to his native land to take the oath of allegiance. From that time he resided in Turin, Italy, where he died on March 20, 1894.



LOUIS KOSSUTH

Krakato′a, a volcanic island in the Strait of Sunda, is remarkable for a terrific explosion on Aug. 27, 1883, when a large part of the island was blown away, destroying 163 villages and killing more than 36,000 people. This explosion is exceedingly interesting from a scientific point of view, since the dust which was carried many miles up into the atmosphere was later transported over the entire earth and produced remarkable red sunsets for many months. Not only so, but the atmospheric wave thus started was traced around the earth, by means of the barometer, during 3½ round trips to the antipodes and back. Sound waves were heard at the incredible distance of 2,000 miles. See *Report of the Krakatoa Committee of the Royal Society.*

Kreut′zer Sona′ta is the title by which Beethoven's *Sonata in A, op.* 47, for piano and violin, is commonly known. It was first played by Beethoven and Bridgetower the violinist (known as the Abyssinian Prince) in a suburb of Vienna in May, 1803. The movements are an introductory adagio sostenuto, leading to a presto; an andante con variazioni; and the finale presto. The sonata derives its name from its dedication to Rudolphe Kreutzer (1766–1831), the violinist and composer. This sonata is considered representative of Beethoven's chamber compositions.



S. J. P. KRUGER

Kru′ger, Stephanus Johannes Paulus, a Boer statesman and former president of the South African Republic, was born in Cape Colony in 1825. When a child he went with his parents and others on the famous *trek* or march across the country beyond the Vaal River, to form a new settlement beyond English jurisdiction. Kruger grew to manhood amid the scenes of the African frontier. He took part in all disturbances for years, at one time holding office under the British government until dismissed under charges, after which he became an agitator for independence. In 1883 he was elected president of the South African Republic, and was re-elected in 1888, 1893 and 1898. He was active meantime in efforts to obtain an outlet upon the coast. Kruger was illiterate, but possessed much native ability. He ably conducted the diplomatic negotiations which preceded the Boer War, and on Oct. 9, 1899, issued the ultimatum which led to the opening of hostilities. Under the leadership of Kruger and his generals the war was prosecuted with energy and aggressiveness, the English forces were defeated in several serious engagements, and not until Lord Roberts was sent with reinforcements which augmented the English army to 200,000 men were the Boers forced to give way in the unequal contest. After the loss of Bloemfontein, Johannesburg and Pretoria, President Kruger embarked for Holland, whence he appealed ineffectually to the European powers to intervene in behalf of the Boers. He died on July 14, 1904.

Krupp (*krŏŏp*), **Alfred,** the head of the large iron and steel works at Essen, Prussia, was born at that place in 1812. His father had founded a small forge there in 1810, and at his death in 1848 Alfred took control, finding "more debts than fortune." Krupp established the first Bessemer steelworks in Germany and the first forging hammer. The first steel gun manufactured at Essen was a three-pounder muzzleloader. To Krupp belongs the credit of introducing steel as a material in the construction of guns. In 1862 he exhibited a cast-steel block weighing 20 tons, which showed what the Essen works were capable of doing in the manufacture of heavy ordnance. He showed a similar block of 50 tons at Paris in 1867 and one of 52 tons at Vienna in 1873. At the Düsseldorf exhibition of 1880 he exhibited a steel gun of 100 tons. Krupp also acquired large mines and collieries, and his works have continued to increase in extent until they cover over 1,000 acres. The total number of men employed at the works and in the mines is about 20,000. Krupp died on July 14, 1887, and his funeral was attended by 60,000 people. His son Alfred succeeded him, and under him was manufactured, in 1888–90, the 135-ton gun for the fortifications at Cronstadt. He died on Nov. 22, 1902. See *Alfred Krupp* by Bädeker.

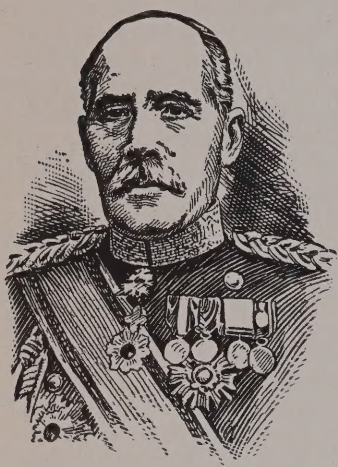
Kryp′ton. See ARGON.

Kubelik, Jan, a renowned violinist, was born at Miehle, Bohemia, in 1880. His father was a market-gardener, but gave a good musical education to his son, who graduated at Prague Conservatory. He appeared in Berlin and London in 1900, and subsequently made successful tours of the Continent and the United States. He has received decorations from the pope and from Servia, and is an honorary member of the philharmonic societies of London and Prague

Kublai-Khan (*kōō′blī-kän*), the grand khan of the Mongols and the founder of the Mongol dynasty in China, was born in Tartary in the early part of the 13th century and died at Peking in 1294. He was an able and energetic prince, and, after overthrowing the Sung dynasty of southern China, compelled Korea, Cochin-China, Burma, Java and some Malabar states in India to acknowledge his supremacy. He encouraged men of letters, made Buddhism the religion of the state, and manifested great interest in the welfare of his people. He established himself at Kaanbaligh or City of the Khan, modern Peking, and there founded the new dynasty of Yuen, the first foreign race of kings that ever ruled over China. Kublai's dominions extended from the Arctic Ocean to the Strait of Malacca and from Korea to Asia Minor and the confines of Turkey, a territory the extent of which had never before and has never since been governed by any monarch in Asia. The splendor and magnificence of his court inspired the graphic pages of Marco Polo, who spent considerable time in Peking during his reign, and at a later date the imagination of Coleridge. See Yule's *Marco Polo;* Howorth's *History of the Mongols;* and Curtin's.

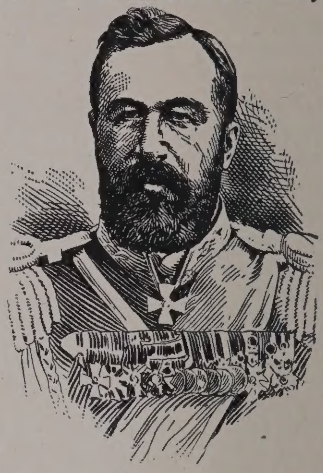
Ku Klux Klan was a secret organization which terrorized the freed negroes and not seldom the "carpet-baggers" and northerners during the five or six years subsequent to the Civil War. Its origin may have been directly out of the old patrol kept in slaveholding days; but it was excused chiefly by the violence of some negroes, unused as they were to their newfound freedom. But the Klan did not limit itself to the original attempt at playing upon the superstitious fears of the negroes. The white sheets, masks and cardboard hats were a safe disguise which tempted the worst spirits to lynchings, whippings and similar excesses, until the better class of southerners withdrew, and it became a blot and scourge. After 1872 the organization became little more than a name, although isolated attempts were often made to trade upon the terrors of its reputation.

Kur'distan'. See KOORDISTAN.



GEN. KUROKI

Kuroki, General Baron Itel, was born in 1845 in the city of Kagoshima in the southeast of Kiushiu, the southernmost of the chief islands of Japan. Here the hardiest Japanese are born; it is the Sparta of Japan, the birthplace of Togo and Oyama. Kuroki is of pure *samurai* (or noble) descent; the story of his foreign parentage is false. As a boy he entered the army in a humble position, but in the war of 1868, when he was but 23, he commanded a detachment which was in the very thick of the fighting, and rendered the Mikado great service against his rebellious subjects. In 1871 he was appointed captain of the imperial guard. He served with distinction against the rebel forces in the war of 1877. He was quick to adapt himself to the suggestions of the Germans who trained the Japanese army. In the war against China in 1894 he acted as commander of the sixth division, ranking as lieutenant-general. His forces gained special distinction at the capture of the fort of Wei-Hai-Wei. When war began against Russia in 1904, he was appointed commander-in-chief of the first Japanese army-corps in the field, and as such led the main advance across the Yalu and up the line of the Russian railway towards Harbin. He won the great victories of the Yalu (near Wiju), Liao Yang and Mukhden. His generalship was commonly counted superior to that of the Russian commander, Kuropatkin, and received almost universal commendation.



ALEXEI N. KUROPATKIN

Kuropatkin, Alexei Nikolayevitch, the Russian generalissimo during the earlier part of the war with Japan, was born in 1848. He went to the military school of the cadet corps in Pskov near St. Petersburg; then to Pavlovskoe Military College, graduating and gaining his commission as sublieutenant at 18. He then hastened to scenes of conflict in central Asia. Returning, he spent six years (1868–74) in study at the Academy of the General Staff in St. Petersburg. Later he studied in France, where he was awarded the cross of the Legion of Honor. Returning to Russia, he served in Tartary and western China. He spent 12 years at St. Petersburg as professor of military statistics at the Academy of the General Staff. He was called to the front and won the rank of major-general and the Cross of St. George at the siege of the Turcoman fortress. In 1890 he was appointed governor of the transcaspian region, and promoted to the rank of lieutenant-governor. While there he was influential in establishing trade-schools. Thence he went to St. Petersburg as minister of war, where he remained until 1904. He distinguished himself by sound though unsuccessful generalship in the Russio-Japanese War, only to be superseded by a subordinate and to fall into unmerited disgrace.

Kuyunjik. See NINEVEH.

Kwangtung', a maritime province of southern China. Area, with the adjoining island of Hainan, 99,970 square miles; estimated population 31,865,250 The capital is Canton (population 1,250,000). Tea is extensively cultivated, while silk culture is one of the chief industries.

L

L (*ĕl*), the twelfth letter, is a vocal consonant. It usually is called a liquid, because it flows into other consonants, and they into it, as an intermediate between such consonants and the vowels. It sometimes is even considered a semivowel, because in some words it plays the part of a vowel in making a syllable. The Japanese cannot say *l*, substituting *r*. Since it is formed by both palates and the tongue, as in *all*, *battle*, *blow*, *evil*, it is classed with the palatals. At the end of a monosyllable containing a single vowel, *l* is often doubled, as in *fall*, though not after diphthongs, as *foul*, or digraphs, as *foal*. When a word ends in *le*, *e* is silent and *l* is preceded by a glide, as in *able*. The Romans used it as a numeral (50) as well as a letter.

La Bil'lois, Hon. Charles H., of French Irish descent, was born in New Brunswick in 1856, and elected to the legislature in 1883, and is a member of the Executive Council and Commissioner of Public Works

Lablache (*lȧ'blăsh'*), **Luigi,** an operatic singer of renown, was born at Naples, Dec. 6, 1794. His first engagement as a singer was at Naples in 1812, and he afterward sang with much success in most of the large cities of Europe. His voice was a deep bass of great volume and exquisite quality, and his acting was on a par with his singing. Lablache gave instruction in singing to Queen Victoria. He died at Naples, Jan. 23, 1858.

La'bor is effort made for the satisfying of human needs. It is one of the three leading-factors in production, the others being land and capital. It is of more importance than the other two, for without labor land could not be made productive and capital could not result. Productive labor is that which produces what is necessary for man's use; unproductive labor, like that of the musician, is that which does not add to material wealth. In the early years of the world's history men performed the labor of the chase, fishing and like pursuits, and women and slaves performed the drudgery. Compulsory labor formed the basis of ancient civilization. The pyramids of Egypt and other great works were possible because the authorities could command forced labor. Slavery and serfdom are forms of forced labor. Toward the close of the 18th century labor began to be organized in large factories, with the result that great changes have taken place in the condition of the workmen. Trade-unions and co-operative societies have sprung up and the workingman's admission to the franchise has made organized labor a powerful factor in the political world. The purely wage-workers of the United States, whose average income does not much exceed $475 annually, number over 15,000,000 or three tenths of the population. The Federation of Labor is an organization of American wage-workers, and its object is to obtain the best results for the laboring people by fair and honorable means.

Labor Day in the United States is made a legal holiday as a recognition of the importance and nobility of labor. The day is the first Monday in September, and all government offices are closed. In many places in Europe the 1st of May is observed.

La'bor Or'ganiza'tions and Parties. These began in the United States in 1825, when industrial progress showed itself in earnest and immigration from Europe began to attract attention and incite fears of competition in the field of labor. The first national convention of labor was held at Louisville, Ky. in 1865, only some 25 delegates being present. A second convention was held at Baltimore in 1866, one at Chicago in 1867 and another at New York in 1886. At this meeting the questions of female suffrage and labor-reform were agitated. A convention was held at Philadelphia in 1869, and it was decided to hold a greater congress at Cincinnati in the following year. At this meeting many radical reforms were proposed, and the immediate organization of a political party to be known as the National Labor Reform party. This was the definite beginning of the labor-in-politics movement, which continued for some years, the Labor Reform party holding its first national convention at Louisville in 1872. After the panic of 1873 many organizations arose: a Workingman's Party, the Labor Party of the United States, the National party or, as it was otherwise known, the Greenback-Labor party. At the election of 1878 this party polled votes in 37 states, and gained immensely over the number cast at any previous election. Encouraged by this success, a convention that met in Chicago in June, 1880, nominated James B. Weaver for president and B. J. Chambers for vice-president, but at the polls the vote for these candidates was comparatively small. In 1884 B F. Butler of Massachusetts was nominated. At the following election less than 134,000 votes were polled, and the party ceased to exist. In later years labor interests have occupied themselves more particularly with interior organization in the way of compact and efficient unions that exist without regard to the politics of their members. These trade-unions are, as to their origin, very old. In the United States they belong to the 19th century. The principle on which these trade-unions are formed is that men whose industrial interests are the same should act together in furthering them. A union is an organization that takes an active interest in the welfare of its own members and a secondary interest in the welfare of all similar unions. These unions affiliate and become powerful and influential organizations. An instance of this was the Knights of Labor and (at the present time) the American Federation of Labor.

The American Federation of Labor comprises 110 international and national unions, representing approximately 22,000 local unions, 43 state branches, 638 city central unions and 558 local unions. The total membership is about 2,000,000. The official organ is the *American Federationist;* besides this representative journal, the affiliated unions issue about 250 weekly or monthly papers devoted to the cause of labor.

In England labor parties and their organizations constitute a new power in politics, 30 members representing labor in Parliament in addition to those known as the Liberal-Labor members. In 1907 the trade-union congress represented 1,693,000 trade unionists, a considerable number of whom were socialists. The labor party in the House of Commons, it is estimated, represents nearly 3,000,000 workers, of whom nearly all are members of the trade unions. International trade unionism has of recent years grown apace. It is estimated that there are over 10,000,000 (including working women) laborers organized in trade unions in the chief countries of Europe and the United States.

A feature of the labor situation which deserves special mention is workmen's insurance (*q. v.*). In the United States, outside of the industrial departments of the regular insurance companies, there are a large number of funds or societies maintained by labor organizations to insure members against sickness, accident, death, old age or other adversity. Some are conducted by workmen for mutual benefit without regard to common employment or connection with any particular union. Of these organizations three-fourths are managed by members, and the majority of the remainder managed by joint arrangement between employer and employe. Nearly all of these funds attempt to secure little more than to relieve immediate necessities. They include "tool," "unemployment," and "marriage" benefits.

Trade union (*q. v.*) demands embrace (1) more efficient enforcement of the eight-hour principle; (2) further restriction of immigration; (3) no relaxation of the Chinese exclusion laws; (4) elaboration of the shipping laws and protection for seamen; (5) no antipilotage laws; (6) reorganization of the Congressional committees on labor; (7) safeguarding against the competition of convict labor; and (8) a more radical antiinjunction bill.

Labouchère (*lȧ'bo͞o'shâr'*), **Henry,** an English journalist and parliamentarian, was born at London in 1831. Educated at Eton, he afterwards entered the diplomatic service and served as an attaché at a number of the most important embassies. He was elected to the English parliament in 1865, but was unseated in the following year. He was elected again in 1867, and went abroad in 1868. As correspondent for the London *Daily News*, he sent news-matter from Paris during the siege by means of carrier pigeons. Returning to England, he was in 1880 again elected to parliament for Northampton, and represented it until 1906. He edited and published a journal called *Truth*, in which he frequently gave vent to his radical ideas by assailing royalty and the aristocracy. In 1900 he was denounced in the Commons for holding correspondence with the official burghers of the South African Republic before the Boer War, but did not lose his seat. In his later years he spent much time in Italy where he died, in Florence, Jan. 16, 1912.

Laboulaye (*lȧ'bo͞o'lȧ'*), **Edouard René de,** a French jurist, was born at Paris, Jan. 18, 1811. He adopted the profession of an advocate or lawyer, and in 1849 was appointed professor of comparative jurisprudence in the College of France. Although he attained distinction as an essayist and story-writer, his most important works have been on French law. His *Histoire Politique des Etats-Unis* is well known in the United States. Laboulaye was elected to the national assembly in 1871, and was made a life-senator in 1876. He died at Paris, May 25, 1883.

Labrador (*lăb-ra-dôr'*), the eastern peninsula of Canada that extends northwestward from Belle Isle Strait (which separates it from Newfoundland) to Hudson Strait, and on its northeastern front facing the Greenland Sea. The region is bleak and rugged and the climate severe. On the coast are a few Moravian missionary settlements, consisting partly of Eskimos, who are engaged in the seal, cod and herring fisheries and in the fur-trade. A large portion of Labrador, especially on the seafront, is under the government of Newfoundland; the interior forms part of Quebec, and what was the territory of Ungava. Area 120,000 square miles; population under 4,000. There is hardly any vegetation on the Atlantic coast, and the inner parts of Labrador have been but little explored. There are fine forests of firs and birches; while large rivers and lakes afford continuous waterways in summer for great distances. The inhabitants are Cree

Indians. The rivers abound in salmon and whitefish, and such furbearing animals as bears, wolves, foxes, martens, otters and beavers are found in large numbers. Little is known of the mineral resources, but iron is abundant. Grand Falls at Hamilton Inlet have been described as one of the best waterpowers in the known world. There is an enormous quantity of pulpwood at the Inlet. Newfoundland claims jurisdiction completely around it and over a much wider strip than is usually marked on the maps. Lumbering is going on at Melville Bay. The largest ocean vessels can go up Hamilton Inlet and unload off the banks. The nearness of the territory to the British market makes it valuable. Labrador is one of the chief centers of the herringfishery. The disputed boundary between Canada and Newfoundland on the eastern coast retards development. There are no hotels in Labrador. The Moravian Brethren, the Royal Mission to Deepsea Fishermen, the large planters and the settlers all extend hospitality to visitors. The days are long in summer, and at night the atmosphere is clear. One can go the whole length of the coast without spending a night at sea. Dr. Grenfell has cruised the coast year after year in sailingboat and steamer, and has never lost a life. He says that the coast is a fascinating and safe field for pleasure cruising.

Labrador Current, The. This is an arctic current which carries a steady stream of icy water southward along the coast of Labrador to near Newfoundland, where its meeting with the warmer Gulf Stream causes the chronic fogs of the Banks. Its influence is plainly felt along the northern New England coast also. The fisheries of the "banks" of Newfoundland and of Labrador depend in two ways upon this current: it brings a "living slime" which is food for the cod and herring; and these fishes only thrive where the temperature is low.

Labuan (*lä'bo͝o-än'*), a crown-colony of Britain, since 1906 under the government of the Straits Settlements. Labuan is an island in the Malay Archipelago, close to Borneo. Area 30 square miles; population 8,411. The port and town is Victoria (population 1,500). Coal is the chief product, though among the exports are indiarubber, gutta-percha, sago and wax.

Lab'yrinth, the name of some celebrated buildings of antiquity, consisting of a series of chambers or passages, the Egyptian, Cretan and Samian labyrinths being the most noted. The Egyptian one has 3,000 chambers, and is one of the wonders of the world. The Cretan was supposed to have been built for King Minos to contain the Minotaur, and the only mode of getting out was by means of a linen thread, which gave the clew to the dwelling of the Minotaur. Labyrinths are sometimes called mazes, and were fashionable in gardening. The best known in modern times is the maze at Hampton Court in England.

Lac, an East-Indian monetary term, the equivalent of 100,000 rupees. A hundred *lacs* are called a *crore,* and equal 10,000,000 rupees.

Lac is a colored resinous substance produced by a small bug. It is found in India, Burma, Siam and China. The female insect produces the lac, although some naturalists contend that lac is merely the resinous juice of trees, altered in character by the insect feeding upon it. *Stick-lac* is the name given to it when it is still attached to the twigs of the tree. After having been removed, placed in tubs of water and trodden by men, it becomes *seed-lac* and the water, colored red by the dead insects, after evaporation forms the *lac dye* of commerce. After the seed-lac has been dried and purified, it is spread in very thin sheets and, broken up, becomes the shellac of commerce. It is made into varnish (lacquer), and is used to stiffen the calico frame of silk hats. It is also used in sealing wax and cement, and the Chinese color it and use it in decorating boxes.

Lacedæmon (*lăs'ê-dê'mun*), the name used in Homer for Laconia and Sparta, its capital. It gradually dropped out of use, and does not seem to have been revived until several years after Christ. See LACONIA and SPARTA.

Laccadive (*lăk'kȧ-dīv'*) **Islands,** 14 coral islands (nine inhabited) owned by Britain. They lie about 200 miles off the western or Malabar coast of Madras Presidency. Population 10,274, chiefly Mohammedan. The staple product, besides the fiber known as coir, is cocoanuts.

Lace, an ornamental fabric of linen, cotton, silk or any threads looped, woven, plaited, knitted, knotted or twisted into definite patterns. There are three varieties of lace, two made by hand — needle or point lace and pillow lace — and the third by machinery. Although the machine-made lace cannot approach the hand-made in beauty and delicacy of design and in strength and durability, more effort and ingenuity have been spent upon it than upon any other branch of textile industry. Lace consists of two elements, the pattern, flower or gimp, which forms the heavier and closer-worked portion of the design, and the network or ties which hold these together. In some cases the ground or heavy work is almost entirely wanting, and then the design is held together by tying at those places where the points meet. Frequently the ground consists of a filmly honeycomb, called a *réseau,* on which the pattern is sewed, after being separately made; this is known as *appliqué.* Other technical names are *cordonnet,* a stout thread employed to outline a pattern; *picot,* a small loop worked on the edge of a pattern; and *modes,* which are ornamental fillings

Point lace, a development from embroidery, was first known in the first half of the 16th century, its original production and development being in Venice. From Venice the manufacture of point lace passed into France and Flanders, the principal places of production being Alençon and Brussels. At Honiton and other points in southwestern England the manufacture was begun about the end of the 16th century by refugees from the Low Countries. To encourage the trade and induce lacemakers to come to England, Parliament in 1662 prohibited the importation of lace; but the makers, being unable to procure the fine thread necessary, were forced to return to their own countries. Then ensued extensive smuggling between Brussels and England. Cheap imitations are now driving the real article from the market. Gold and silver lace are made of flat bands or very thin ribbons wrapped closely around cotton thread of yellow and white respectively as a basis. This manufacture is associated with the ribbon trade and is carried on in the same districts.

Lachine′, a town of 6,000 people on the St. Lawrence River, is noted for its picturesque rapids and important canal. Lachine Canal is eight and a half miles long. It has five locks 270 by 45 feet. The total rise or lockage is 45 feet. Its average width is 150 feet, the depth of water on the sills being 14 feet. The canal consists of one channel only. It extends from Montreal to Lachine, overcoming St. Louis Rapids, the first of the series which bars the ascent of the St. Lawrence. They are 986 miles from the Straits of Belle Isle. See Welland Canal and St. Lawrence River.

Lachine Rapids. These form a rough and dangerous, although short, section of the St. Lawrence. Lachine Canal enables vessels to avoid the rapids. The name, which means China, refers to a delusion of some early explorers who had expected the St. Lawrence to lead them into China!

Lackawanna (*lăk′ȧ-wŏn′a*) **River,** Pennsylvania, flows through the Wyoming and Lackawanna coalfields, which produce half the anthracite mined in the United States. It is a tributary of the Susquehanna, and empties into it near Pittston. Its length is 60 miles.

Laco′nia, N. H., city, county-seat of Belknap County, on the Winnepesaukee River, about 100 miles north of Boston, is situated in a lake region, where attractive scenery, good climate and fine fishing have made it an inviting summer resort. It manufactures machinery, lumber, paper boxes, hosiery and railroad cars. The hosiery mills and car-shops employ about 1,800 people. The city has good public and parochial schools, Gale Memorial Library and several churches, and here are the state Home for Feeble-Minded Children and the state fish-hatchery. The settlement was formed in 1800–2, incorporated as a town in 1852 and chartered as a city in 1893. Two divisions of the Boston and Maine Railroad run through Laconia. Population 10,183.

Lacquer (*lăk′ẽr*), a yellowish varnish made by dissolving shellac in alcohol, and colored with gamboge, saffron and the like. It is used chiefly for metals, especially brass, to give them a golden color and preserve their luster. The name is also given to the varnish used by the Chinese and Japanese in their beautiful lacquered ware, and is made from the juice of a kind of *sumac* which grows in their country and is called the varnish tree. This varnish is mixed with vermilion for making red lacquer, and other colors or golddust are so used. The most costly lacquer work is that inlaid with mother-of-pearl and ornamented with gold designs. This brings high prices even in China and Japan. See Lac.

Lacrosse (*lȧ-krŏs′*), a Canadian field-game played with a long, light hickory stick, bent like a shepherd's crook, with thongs of deer-skin drawn across in the form of a netting, and with an india-rubber ball eight or nine inches in circumference. The goals are two posts about six feet high, with a flag at the top of each. The object is to drive or carry the ball through the opposing side's goal. There usually are 12 on a side, and the players are not allowed to touch either the ball or each other with their hands. The National Lacrosse Association of Canada was formed in 1867, and since then the game has become popular in places.

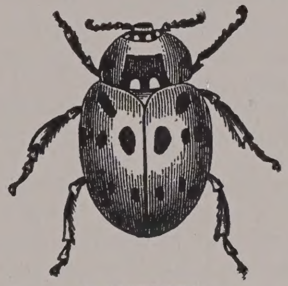
La Crosse, a city of Wisconsin, is situated on the east bank of the Mississippi, where it is joined by the Black and La Crosse Rivers. The former comes from the great forests of the north, from which it has brought down more than 5,000,000,000 feet of pine. The valley of the latter furnishes an easy outlet for railway lines to the east, while Root River, coming into the Mississippi just below the city from the west, gives easy access to the fertile prairies of Minnesota and Dakota. The location has given La Crosse the nickname of The Gateway City. It lies about midway of the most picturesque section of the Mississippi, the bluffs here attaining their greatest height — about 600 feet above the river. The site was known as Prairie La Crosse from the Indians' custom of assembling there to play lacrosse, and from this the city gets its name. It was settled as an Indian trading-post in 1841. The manufactures of sash, doors and blinds, church altars, ornamental iron work, telephones, electrical fixtures, gasoline engines, launches, tools, wagons, carriages agricultural machinery, tinware, clothing, knitgoods, boots, shoes, rubber goods spring mattresses, leather, flour, candy, crackers, pearl buttons and brooms are leading industries. The city has three hospitals, beautiful parks, a fine public library, a state normal school, high school and excellent public schools, which employ 130 teachers and enroll over 5,000 pupils. The main lines of three great railway systems intersect at this point, and these, with the river, give admirable transportation facilities. A fine wagon bridge, owned by the city, spans the Mississippi and facilitates local traffic and travel Population 30,417.

Lactom'eter or **Galac'tome'ter,** a simple instrument used in testing the richness of milk, is graduated into a hundred parts. Milk is poured in and allowed to stand until the cream has formed, then the depth of the cream deposit in degrees determines the quality of the milk. Another instrument, invented by Doeffel, is two inches long, divided into 40 parts, beginning at the point to which it sinks when placed in water. Milk unadulterated is shown at 14°.

Ladd, George Trumbull, an American educator and philosopher, was born at Painesville, O., Jan. 19, 1842, and educated at Western Reserve College and Andover Theological Seminary. After serving as pastor of various Congregational churches until 1879, he became professor of intellectual and moral philosophy at Bowdoin College, and in 1881 was appointed to the chair of philosophy at Yale University. He is the author of *Principles of Church Polity; Doctrine of Sacred Scripture; Elements of Physiological Psychology; Philosophy of Religion; Psychology, Descriptive and Explanatory; Philosophy of Mind, Philosophy of Knowledge; Essays on the Higher Education; A Theory of Reality* and *The Philosophy of Conduct.*

Ladoga (*lăd'ō-gȧ*) **Lake,** the largest lake of Europe, is situated in Russia near Petrograd, and is crossed by the dividing line between that country and Finland. It is 129 miles long and 68 wide, and has an area of 6,998 square miles. The southern and eastern shores are marshy, but the northwest rises into cliffs. It receives the waters of Lakes Onega and Ilmen in Russia and Saima and others in Finland. Ladoga at its deepest part is 730 feet in depth. Navigation is dangerous on account of shoals, sandbanks and hidden rocks, besides furious storms. The rivers emptying into it are connected by canals at their mouths. It empties into the Gulf of Finland by the Neva. On two of its many islands are two monasteries, founded in 960 and 1393 respectively, which are visited by many pilgrims every year.

Ladrones (*la-drōnz'*) or **Mariana, Pelew or Caroline Islands,** formerly a Spanish possession, are 15 small islands in the northern Pacific with a total area of about 420 square miles They now constitute part of the German New Guinea protectorate The group lies between the Philippines and the Marshall Islands north of German New Guinea. Their population is about 36,000. They were discovered by Magellan in 1521, his sailors calling them Ladrones or Thieves' Islands on account of the thieving propensities of their inhabitants In 1668 they received the name of Mariana Islands At the time of discovery the natives numbered 60,000; but now the inhabitants, Chamoros, Tagals and mixed Spanish, do not exceed 8,700 The islands are divided into two groups by a channel, the southern five being low and marshy and the northern ones well wooded, high and mountainous. Almost all are well-watered, woody and fertile. The largest island, Guam (area 198 square miles and population 12,240), was ceded to the United States in 1898 The remainder of group were purchased by Germany in 1899.


LADYBUG

Lady'bird or **Lady'bug** is the common name for any one of a group of small beetles. They are rounded on the back and flat below. Their wing covers usually are marked with spots. As to colors, they generally are red or yellow with black spots, or black with white, red or yellow spots. Many ladybirds hibernate, a common one sometimes coming forth in a warm room in midwinter. The beetles are long-lived and very prolific, of much benefit to agriculturist and horticulturist. Their larvæ are of great service to hop-growers and fruit-farmers in destroying plant-lice and other injurious insects. Almost all the beetles as well as the larvæ feed upon plant-lice or aphids and upon scale insects. They frequently are found upon house-plants. The eggs are yellow, often deposited in a colony of plant-lice, upon which the larvæ begin to feed as soon as hatched. They are rather long, often spiny and spotted with bright colors. They run about freely on the foliage and devour great numbers of aphids, which are fixed by their beaks to the plants. The larva grows fast, changes its skin several times, when fullfed glues itself to a leaf; casting off the last larval skin the pupa is disclosed, hanging by its tail. In favorable circumstances the beetle is developed from the egg in about a month. There are two or more broods in a season. The ladybirds that feed upon scales are smaller than the other ladybirds, black in color, sometimes spotted with orange or red. Some years ago, when the white or fluted scale was such a fearful pest to fruit-growers on the Pacific coast, working especial ruin in orange and lemon orchards, the experiment was made of bringing in the Australian ladybird, which feeds upon fluted scales, with the result that in one year orchards were freed from the pest and verdure and bloom restored. To combat the San José scale the Asiatic ladybird has been brought into the country, the Asiatic species feeding voraciously upon this scale. See U. S. Department of Agriculture, Bulletin 18, New Series, Washington, 1898.

Lady of the Lake, The, a narrative poem by Scott, so named from the heroine Ellen Douglas who lived on Loch Katrine. It was the world's first revelation of the lovely scenery in the Highlands of Scotland and of the poetry of clan life.

Lady'smith. an inland town of Natal, South Africa, is situated on a plain entered by the Klip River and surrounded by hills. The town attained a peculiar fame from the investment of the place by 20,000 Boers and the heroic defense of the besieged British force numbering about 11,000, under General Sir George White, who held out for 118 days, when they were relieved by General Sir Redvers Buller in the spring of 1900. Population 5,000.

Ladysmith, a mining town and shipping port on Vancouver Island, is growing rapidly.

Lady's Slipper, a family of plants belonging to the orchid order, is remarkable for the large cup-like shape of the lip of the corolla. Several beautiful species are natives of the colder parts of North America. Collectors vie in collecting the many different specimens.

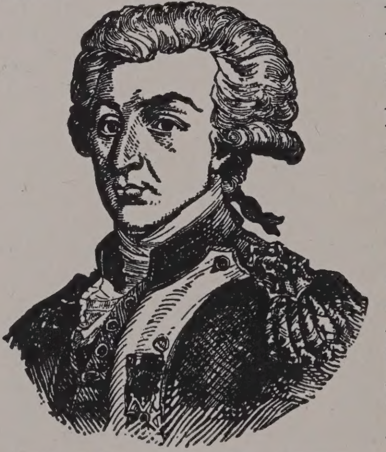
The pink lady's slipper or moccasin flower is like an Indian moccasin; about a foot from the ground hangs singly and gracefully from the top of a smooth scape; in color pink with darker lines; a pair of oblong leaves near the base of the stem. It is found in deep woods along the eastern coast and west to Minnesota, blooms in May and June, is becoming rare and should be carefully protected.

Laertes (*lā-ĕr'tēz*), a character in Greek mythology. He was king of Ithaca but resigned the crown to Odysseus (Ulysses), his son, the hero of Homer's *Odyssey*, when the latter was old enough to bear responsibilities. Laërtes joined in the Calydonian hunt and the Argonautic expedition. The absence of the son during the Trojan War cast the father into melancholy, but on the hero's return the sire was rejuvenated by Athene and took part in the fight against the suitors of Penelope, wife of Odysseus.

La Farge (*lä färzh'*), **John,** an American artist, was born on March 31, 1835, at New York. He is famous as a painter of figures, flowers and landscapes, and was elected a member of the National Academy in 1869. His paintings have gained high praise for charm of color, imagination and suggestiveness. The *View over Newport*, *New England Pasture Land* and *St. Paul at Athens* are noteworthy. Ill-health obliged him to give up the practice of painting, and he turned his attention to decorative art, especially stained glass. By the discovery of opalescent glass he made important improvements, and succeeded in producing beautiful effects. Among his most striking works in this line are Battle Window in Memorial Hall at Harvard University and Ames Memorial Window at Eaton, Mass. He published *Lectures on Art.* Died Nov. 14, 1910.

La'fayett'e College. See Easton, Pa.

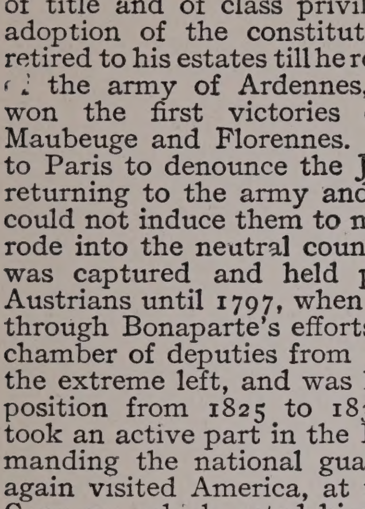
Lafayette, county-seat of Tippecanoe County, Ind., is situated on the Wabash River, and is a junction point for four main-line railroads. The city is about 60 miles northwest of Indianapolis. It is a flourishing city. Laid out in 1825, it has many churches and public buildings. Purdue University, with 1,900 students, is the great land-grant college of Indiana. It was founded in 1874, is an agricultural and technical school (mostly engineering—mechanical, civil and electrical), and stands high among scientific schools. Pork-packing and grain-handling, and the manufacture of automobiles, steering gears, electrical supplies, wire, cardboard, wagons, agricultural implements, machinery, carpets, soap and flour are its industries. It is the principal market for the surrounding highly fertile and prosperous farming country. It has a population of 22,000.



MARQUIS DE LAFAYETTE

Lafayette (*lä fāy ĕt*), **Marie Jean Paul Roch Yves Gilbert Motier, Marquis de,** was born in Auvergne, France, Sept. 6, 1757. He came into his estates early and married at 16, entered the army, and in 1777 sailed for America to serve in the cause of independence. He became an intimate friend of Washington, who gave him command of a division after his conduct at Brandywine. The war between England and France called him back, but in 1779 he returned and took part with Rochambeau's fleet and 6,000 troops at Yorktown. On his visit in 1784 he was so enthusiastically received that his tour was almost a continual triumph. Called to the French assembly of notables in 1787, he sat in the assembly of the states-general and in the national assembly of 1789, where he introduced the famous Declaration of Rights, based on the Declaration of Independence. He was soon appointed to the command of the armed citizens, organized the national guard, and gave it the tricolor cockade. He struggled for order and humanity, and severely condemned the brutality of the revolutionists. After his defeat by Pétion for the mayoralty of Paris, he, with Bailly, formed the club of the Feuillants and advocated the abolition of title and of class privileges. After the adoption of the constitution in 1790, he retired to his estates till he received command of the army of Ardennes, with which he won the first victories of Philippeville, Maubeuge and Florennes. Lafayette came to Paris to denounce the Jacobins; but, on returning to the army and finding that he could not induce them to move on Paris, he rode into the neutral country of Liège, and was captured and held prisoner by the Austrians until 1797, when he was liberated through Bonaparte's efforts. He sat in the chamber of deputies from 1818 to 1824, on the extreme left, and was leader of the opposition from 1825 to 1830. In 1830 he took an active part in the Revolution, commanding the national guard. In 1824 he again visited America, at the invitation of Congress, which voted him $200,000 and a township of land. He died on May 20, 1834. See the *Life* by B. Tuckerman.

La Fol'lette, Robert Marion, member of the U. S. senate from Wisconsin (1905–1925), was born at Primrose, Wisconsin, in 1855, graduated in law from the University of Wisconsin, and was admitted to the bar in 1880. From 1887 to 1891 he was a member of Congress. He served on the committee of ways and means in connection with the McKinley tariff bill. In 1900, 1902 and 1904 he was elected governor of Wisconsin. His attitude of obstruction in connection with the entry of America into the European War aroused wide indignation. He was defeated for President in 1924 on an independent ticket. Died 1925.



ROBERT M. LA FOLLETTE

Lafontaine (*lä fŏn-tän'*), **Jean de,** was born in Champagne, France, July 8, 1621. His early education was neglected, and he took up his father's duties as master of the woods. He then began the study of Rabelais, Marot and other old writers and the making of poor verses. In 1654 he published a translation of the *Eunuchus* of Terence, and went to Paris, where Fouquet gave him a pension of 1,000 francs on condition that he furnish a piece of verse every quarter. His verses showed originality, and he became the pet of society ladies, to whom and to visits with Molière, Boileau and Racine he gave his time for six years. His *Contes en Vers* appeared in 1665; his *Fables en Vers* in 1668; and his *Amours de Psyche et Cupidon* in 1669. For 20 years he lived in the household of Madame de la Sablière, who became devout after he attached himself to Princess de Conti. She died in 1693, and for two years he was maintained by Madame d'Hervart. He died on April 13, 1695. The subjects of his *Contes* are taken from Boccaccio, Ariosto, Machiavelli, Rabelais and other writers. Though extremely gross, they are beautifully written. Lafontaine was one of the idlest, most reckless, frivolous and dissolute of men, yet one of the most lovable, charming and gifted. See Sainte-Beuve's *Portraits Littéraires*, Vol. I, and Taine's *Essay on the Fables of Lafontaine.*

Lagos (*lä'gōōsh*), a British colony, an island and a town on the Slave or Guinea Coast of western Africa, now embraced in the British colony of Southern Nigeria. It is situated alongside the French possession of Dahomé, with about 140 miles of coast. The town has a fine and safe harbor. The colony has an area of 3,460 square miles and a population of about 100,000 of whom 233 are Europeans. The inhabitants are mostly negroes and two thirds pagans, though Mohammedanism is making headway. The exports are palmoil, palmkernels, ivory, gum, copra, cotton and Guinea grains to the value of about $2,500,000 a year and the imports are spirits, tobacco, cotton goods and hardware. The principal trade of Lagos is with England. The present colony was formed in 1880. The island, on whose western extremity stands the town, has an area of 3¾ square miles and a population of 35,000. It was created a separate government in 1863, and formed part of the West Africa settlements from 1866 to 1874, when it was part of the Gold Coast until 1886. There is a railroad 125 miles in length to Ibadan, with a short branch to Abeokuta. There also are telegraphs, telephones and an ocean cable. Adjoining the colony is a territory under British protectorate, whose boundaries were defined in 1899. Its area is 25,450 square miles, with an estimated population of about 1,500,000, the number of Europeans being 308.

La Guira (*la gwī'rä*), the shipping port of Caracas, the capital of Venezuela, on the Caribbean Sea. Population 7,500.

Lahore (*lä-hōr'*), an ancient walled city in British India and capital of the Punjab, stands near the left bank of Ravi River. Its population is 228,687, of whom much over half are Mussulmans. The city covers 640 acres, is surrounded by a brick wall 16 feet in height, and is entered by metalled roads through 13 gates. The fort stands in a commanding position. Punjab University is one of the most flourishing educational institutions in India. Here also are the Oriental College, Government College, Government Medical School, Mayo Hospital and Robert Institute. The origin of the city dates not later than the 7th century, and under the Mogul empire it reached a population of over 1,000,000. The city is noted for its fine carpet industry.

Lake District, the mountainous region of Cumberland, Westmoreland and a small portion of Lancashire in England, within which are 16 small lakes and many mountain streams and mountains rising to 3,000 feet. The district is about 30 miles from north to south and 25 from east to west, affording a beauty and variety of scenery seldom found in so small an area. The place is visited by many tourists. The district has been immortalized by poets, the most prominent being Wordsworth; others are Southey, Prof. John Wilson ("Kit North") Shelley, Mrs. Hemans, Harriet Martineau, Ruskin and Gray. See Professor Knight's *English Lake District in the Poems of Wordsworth.*

Lake Dwellings, houses built on platforms supported by piles or posts in the shallows or margins of lakes. From the earliest times there were lake-dwellers in central Europe, and the custom prevailed in Scotland and Ireland to a late day. When the waters of Lake Zürich in Switzerland receded in 1854, the remains of a lake dwelling were discovered at Meilen, and similar relics were found at the mud-bottoms of many Swiss lakes. Since then they have been thoroughly investigated and their existence determined in the stone, bronze and iron ages. Nothing, however, is known of the origin of this mode of life. In the stone age the larger implements were made of hard stone, the smaller of the less plentiful flint. In the bronze age the dwellings seem to have been further out in the water than in the stone age. The pottery is finer and more elegantly ornamented, and the implements and weapons are of bronze. The lake dwellings of Marin are the best known of the iron age. The extent of the settlement was 1,200 by 250 feet. Many articles of fine workmanship in iron have been found here, such as shield-mountains, buckles, bridle bits, hatchets, dice, small objects of bone and Roman and Gallic coins, the latest being of Emperor Claudius, 41 to 54 A. D. The custom of living in water-houses is still practiced among barbarous tribes in the Malayan Archipelago, New Guinea, Venezuela and central Africa. See Munro's *Lake Dwellings of Europe.*

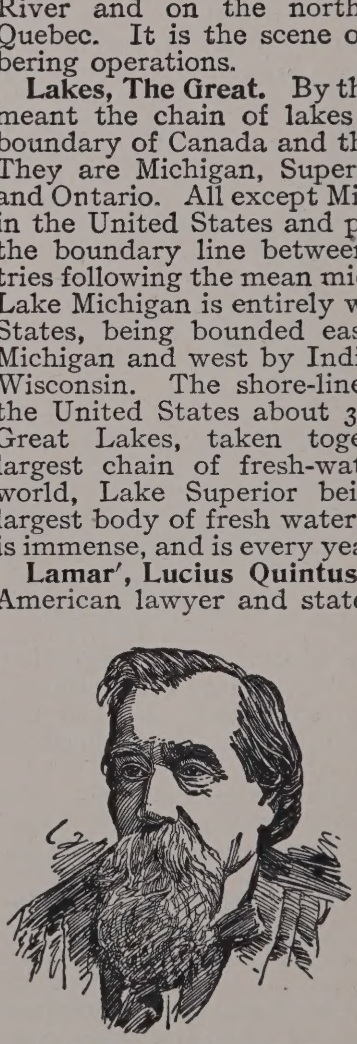
Lake Forest College, a Presbyterian coeducational institution, is located at Lake Forest, Ill., 28 miles north of Chicago. It was chartered in 1857 as Lind University. In 1865 the name was changed by the legislature to Lake Forest University. It comprises Lake Forest Academy, Ferry Hall Seminary, Lake Forest College, Chicago College of Dental Surgery and Chicago-Kent College of Law. Its faculty numbers 127, with 1,400 students. Its library contains more than 30,000 volumes. The productive funds amount to $600,000. Its Bross lectureship belongs to the same class as the Gifford and Bampton of Great Britain.

Lake of the Woods, a picturesque sheet of water, at the western angle of Ontario, where it abuts on Manitoba and Minnesota. It extends southward from Rat Portage, on Winnipeg River and the Canadian Pacific, to Rainy River, the boundary between Ontario and Minnesota. The lake is identified with early attempts at western colonization, for the Verandryes in 1731 built a fort and mission at its southwestern corner and made it the base of later operations. Steamers now ply on it.

Lake St. John Territory, a region in northeastern Canada (area 44,000 square miles), situated in the township of Chicoutimi, at the head of navigation on Saguenay River and on the northern confines of Quebec. It is the scene of extensive lumbering operations.

Lakes, The Great. By this term is usually meant the chain of lakes lying along the boundary of Canada and the United States. They are Michigan, Superior, Huron, Erie and Ontario. All except Michigan are partly in the United States and partly in Canada, the boundary line between the two countries following the mean middle of the chain. Lake Michigan is entirely within the United States, being bounded east and north by Michigan and west by Indiana, Illinois and Wisconsin. The shore-line extends within the United States about 3,000 miles. The Great Lakes, taken together, form the largest chain of fresh-water lakes in the world, Lake Superior being in itself the largest body of fresh water. The commerce is immense, and is every year growing larger.

Lamar', **Lucius Quintus Cincinnatus,** an American lawyer and statesman, was born in Putman County, Ga., Sept. 1, 1825, was educated at Emory College, studied law, and was admitted to the bar in 1847. He was elected to the legislature in 1853. He removed to Mississippi in 1854, and was a member of Congress from



LUCIUS Q. C. LAMAR

that state from 1857 to 1860. He served in the Confederate army during the Civil War, and was sent to Europe as agent of the Confederacy. In 1866 he was made professor of political economy at the University of Mississippi, and in 1872 was again elected to Congress. President Cleveland made him secretary of the interior during his first term, and in 1887 appointed him associate justice of the United States supreme court. Judge Lamar died at Macon, Ga., Jan. 23, 1893.

Lamarck (*lȧ'märk'*), **Jean Baptiste Pierre Antoine de Monet,** CHEVALIER DE, a French naturalist and evolutionist, was born in Picardy in 1744, and educated for the church at a Jesuit college, which he left at 17 to join the French army then at war with the Germans. On account of an injury he resigned and went to Paris, where he engaged in the study of medicine and botany. In 1779 he published the *Flore Française*, appending a new analytic method of classification. In 1793 he was appointed to a post in the *Jardin des Plantes*, and remained for 25 years as professor of invertebrate zoology. Here, after a time, he was joined by Cuvier and St. Hilaire. In 1809 he published his famous *Philosophie Zoölogique*, in which he supported the doctrine that all kinds of animals, including man, are derived from other species. These views were almost entirely superseded by Darwin's theory of natural selection. He died at Paris on Dec. 18, 1829.

Lamartine (*lȧ'mär-tēn'*), **Alphonse Marie Louis de,** was born at Mâcon, France, Oct, 21, 1790. In 1820 he published his first *Meditations Poétiques*, and was appointed secretary of legation at Naples, afterwards becoming *chargé d'affaires* at Florence, where he remained for five years. He married an Englishwoman. In 1829 he accepted a mission to the king of Greece. Being a royalist, he discountenanced the revolution of 1830. He was nominated for the chamber at Dunkerque and Toulon, but was defeated, and then set out upon an eastern tour, writing an account of his travels, called *Souvenirs d' Orient.* His *Jocelyn, La Chute d'un Ange* and celebrated *Histoire des Girondins* appeared from 1834 to 1848. He was a member of the provisional government which proclaimed the republic, and was its first minister of foreign affairs. The dissensions caused by the attempted social reforms of Louis Blanc and Ledru Rollin at last ended in Lamartine's resignation, and he devoted himself to the discussion of public affairs and to literature, publishing *Confidences, Raphael, Genevieve, Tailleur de Pierres de St. Point* and *Histoire de la Restauration.* He died at Paris on March 1, 1869.

Lamb, Charles, English essayist, critic and humorist, was born on Feb. 10, 1775. Lamb received his first education at a small academy, and then for seven years attended Christ's Hospital. His school experiences and friendships, especially with Samuel Taylor Coleridge, are made familiar in his *Essays of Elia.* When he left Christ's Hospital in 1789, he received a clerkship in South Sea House, and was soon promoted to a clerkship in India House, where he remained for more than thirty years. During a temporary attack of insanity, Mary, Charles' sister, killed her mother, and, to keep Mary out of a public asylum, Charles devoted 38 years of his life to her care. Lamb's earliest poems, written in 1795, were published in S. T. Coleridge's earliest volumes (1796). In 1798 Lamb and Charles Lloyd issued a small volume of blank verse, containing Lamb's famous poem of *The Old Familiar Faces.* The same year saw his prose romance, *Rosamund Gray and Old Blind Margaret*, and four years later *John Woodvil.* Lamb, all this time, was moving about from place to place with his sister, and struggling against poverty. *The Tales from Shakespeare*, written by Charles and Mary, were a first success when they appeared in Godwin's *Juvenile Literary.* Then they wrote *Mrs. Leicester's School* and *Poetry for Children* and Charles alone wrote *The Adventures of Ulysses*, a version of *The Odyssey.* The volume of dramas of the Elizabethan period, edited by Lamb, placed him on the top round as a critic, and brought him the engagement to write a series of articles on Shakespeare and Hogarth in Leigh Hunt's *Reflector.* In 1818 a publisher induced him to collect all his verse and essays, and published them as the *Works of Charles Lamb.* This placed him on the staff of the new *London Magazine*, in which all his articles and, indeed, the collection of them in 1823, 1825 and 1833, were signed "Elia." He died at Edmonton, Dec. 27, 1834. See *Life and Letters* by Justice Talfourd and *Memoirs* by Barry Cornwall.

Lamp, a contrivance in which to use the lighting power of an illuminating fluid. In the earliest ages the lamp was an animal's skull or a shell, and this form, in its simplicity, prevailed in the lamps of Rome, Greece and the north. In Greece they were called *lychna*, in Rome *lucernæ.* Animal fats and fish oils were used until vegetable oils, as rape, were manufactured. In 1783 Leger introduced the flat wick, and in 1784 Argand introduced the round burner, which, whether for oil or gas, is known as the Argand burner. Mineral oils, known as paraffin, petroleum, kerosene, crystal oil etc. contain a large amount of carbon, making it necessary to introduce oxygen into the burner to consume the carbon. Such lamps were first made by Stobwasser in Berlin. Mineral oil burners now have either flat or circular wicks, the flat ones being more easily controlled and trimmed. In 1865 the Hinks of Birmingham introduced the double burner, having two parallel flat wicks and two flames, which soon became very popular. All efforts since have been directed toward the improvements in burners, to give perfect combustion and consequently a brighter and better light.

Lamp'black is the soot or carbon deposit obtained from burning substances, as resin, petroleum or tar, rich in carbon. Little oxygen is allowed to reach the flame, so that it becomes smoky, and the soot is caught upon something. For some purposes lampblack is purified by heating in closed vessels. It is used by artists both in oil and water-colors, and a coarser kind is used by housepainters. It is the carbon used on carbon paper that is the chief ingredient of india ink and, in combination with linseed oil, makes printer's ink.

Lam'prey, an eel-like fish belonging to the round-mouthed fishes (*Cyclostomi*). There are both fresh-water and sea-lampreys. They are lower in organization than true fishes, and have no jaws, paired fins or scales. Their skeleton is cartilaginous. They have a round mouth, which is used as a sucker and is armed with numerous horny teeth. They attach themselves to stones and to the bodies of other fishes by the sucking mouth. In the latter positions they scrape off the flesh with their teeth and rasp-like tongue, and feed on the flesh and blood. They cause considerable damage to the good fishes. They also eat worms, larvæ and dead fish. Their gills are in pouches, and communicate with the water through seven round holes on each side of the neck. The sea-lampreys reach a length of three feet. They ascend rivers to spawn. The fresh-water lampreys are smaller. The brook-lampreys are six or eight inches long. The large lake-lampreys are supposed to be identical with the sea form. They have been eaten since the days of ancient Rome in some localities, but despised in others. See Gage's *Lake and Brook Lampreys of New York.*

Lams'dorf, Count Vladimir Nicolaivitch, was born at St. Petersburg in 1845, and died on March 19, 1907. He was one of the world's most distinguished diplomatists, yet fell short, perhaps, of some of the qualities of the true statesman. From 1900 to 1906 he was foreign minster for Russia; and it was said that if it had been desired to confer a new Russian order of distinction upon him, a new one would have had to be invented. He was the friend and adviser of Nicholas I, Alexander II and Alexander III.

Lan'caster, House of, was founded as a duchy during the reign of Edward III of England, and the duke was made county palatine. The heiress married John of Gaunt, and the duchy was settled on him and his heirs by royal charter in 1362. The first English king from the house of Lancaster was Henry IV, the son of John of Gaunt. He was succeeded by his son, but the reign of the house ended with the death of Henry VI. See ENGLAND.

Lancaster, the capital of Lancashire, England, is situated on an elevation on the left bank of the Lune, seven miles from its mouth. The old castle, built on the site of a Roman castle and restored by John of Gaunt, is used as a jail. The city contains St. Mary's Church (15th century) and Ripley Hospital. The Lune is crossed by a bridge built in 1788, but owing to shifting sands vessels must unload five miles below. Its chief manufactures are furniture, cotton, silk, oilcloth, tablecovers, machinery and a railway plant. In 1698 the town almost totally destroyed by fire. Population 40,000.

Lancaster, Ohio, a city and county-seat of Fairfield County, 32 miles from Columbus, is in the center of an agricultural region. Among its industries are railroad shops, carbon works and manufactories for glass, shoes, flour, agricultural implements and foundry products. It has excellent public schools, and is the seat of the state industrial school for boys. Lancaster is the birthplace of Senator John Sherman and General W. T. Sherman. The city owns its waterworks and gas-plants; is situated on the Hocking River and canal; and has the service of two railroads. Population 16,000

Lancaster, the capital of Lancaster County, Pa., is situated on Conestoga River, 68 miles west of Philadelphia, with which it is connected by rail. It also is the terminus of four railroads. The city was founded in 1721, laid out in 1729, named after Lancashire in England, made a county-seat in 1730 and chartered as a borough by George II in 1742. It was the capital of the state from 1799 to 1812, when it was chartered as a city. It is unusually well-built, and has all the appointments and conveniences of a modern city. Its prominent public buildings include the United States internal revenue and postoffice, the court house, the Y. M. C. A. building and many handsome church edifices. The city is the center of one of the richest agricultural regions in the United States. Its chief export is tobacco, of which large quantities are made into cigars. Other manufactures are watches, umbrellas, cotton-cloth and iron. Lancaster especially abounds in small manufactories. Its charitable institutions comprise a children's home, several orphanages, two homes for aged women and two hospitals, besides the insane asylum and hospital. Educationally the city is greatly favored. Its public schools rank high; it is the seat of Franklin and Marshall College and Academy and of the theological seminary of the Reformed Church. The First Pennsylvania State Normal School is at Millersville, four miles distant. James Buchanan, the 15th president of the United States, lived here and is buried here, as were Thomas Mifflin, Gen. J. F. Reynolds and Thaddeus Stevens. The population is 57,000

Lancaster Sound, a passage connecting Baffin's Bay with the Barrow Strait. It was discovered by Baffin, in 1616.

Land-League, an association formed in 1879 by Michael Davitt in Ireland, to buy land for the tenants, though connected with it was a widespread agitation for the abolition of all rents. It was, therefore, suppressed as illegal in 1881.

Lan'dor, Walter Savage, was born at Warwick, England, Jan. 30, 1775. At ten he was sent to Rugby School, but on account of his intractable temper he was expelled. After ten years with a tutor he was sent to Trinity College, but was expelled in 1794. In 1795 he published a volume of poems. In 1798 he published *Gebir*. A hasty marriage in 1811 proved unhappy, and he left his wife, going to France, devoting his time to writing and producing his tragedy of *Count Julian*. His notable works are his *Imaginary Conversations* (1824-48), *Examination of Shakespeare* (1834), *Pentameron* (1837), *Pericles and Aspasia* and his *Hellenics*. He died at Florence, Italy, Sept. 17, 1864. See Forster's *Life* and Sidney Colvin's *Landor* in the English Men of Letters Series.

Land'seer, Sir Edwin Henry, an English animal painter, son of an engraver, was born at London, March 7, 1802. He was carefully trained by his father to sketch animals from life, and began exhibiting at the Academy at 13, but the first work to bring him into prominence was *Fighting Dogs Getting Wind*. After 1823 he painted *The Cat's Paw, High Life and Low Life, King Charles' Spaniels, Suspense, Jack in Office, The Challenge, The Monarch of the Glen, The Stag at Bay* and others. He was knighted in 1850. In 1866 he was elected president of the Royal Academy, but declined the honor. He died after much mental suffering, Oct. 1, 1873, and was buried in St. Paul's, London. See *Sir Edwin H. Landseer* by F. G. Stephens in the Great Artists Series, 1889.

Land's End, the southwestern extremity of England (the ancient *Bolerium*), the western point of Cornwall. It is directly opposite to the Scilly Isles, which form a part of Cornwall, and is the southern land boundary of Mount's Bay, which on the north terminates in Lizard's Point.

Lands, Public, in the United States, refer to such lands as are held in ownership by the national government. Originally, indeed, the states which united in 1787 laid claim to the whole of the United States territory; but they speedily ceded to the national government all the lands which were not strictly within their limits. As a consequence, the United States became possessed of vast regions in the west. With the admission of new states into the Union vast tracts fell to the federal government, especially in the case of the Louisiana purchase and the acquisitions of Texas, Florida and Alaska. At the present time the lands still undisposed of reach over 800,000,000 acres. These lands are administered by the General Land Office, a bureau of the Department of the Interior. The great bulk of them lies in Montana, Nebraska, New Mexico, North and South Dakota, Oregon, Washington, Wyoming, Utah, Idaho, Arizona, Colorado, California and Alaska. In Alaska alone there are estimated to be 359,492,760 acres of public lands.

Congress has been very liberal in the disposal of these lands, chiefly in the following ways: First, in the earlier days, by very cheap sales, either for cash or credit and in large bulk. Second, by grants to the states, especially for railroads, for canals, for irrigation and for education. Third, by grants to individuals for their services to the state. Fourth, for closer settlement, especially under the preëmption and homestead laws (see HOMESTEAD LAWS). The last of these methods is now chiefly favored Each state admitted to the Union since 1850 receives one township in every 18 for education, an additional grant of four townships for a university and a grant for a college of agriculture.

Lang, Andrew, LL. D., a British writer and versatile man of letters. He was born at Selkirk, Scotland in 1844, and was educated at Edinburgh Academy, St. Andrew's University and Balliol College, Oxford graduating with honors. He was elected a fellow of Merton in 1868, and in 1888 was appointed lecturer on natural religion at St. Andrew's University. His versatility and indefatigable labors are shown in the fact that he was at once historian, biographer, essayist, novelist, creator of dainty stories and author of erudite works on human origins and similar subjects. His *Ballads in Blue China* appeared in 1881, and later he published *Custom and Myth; Myth, Ritual and Religion; Lives of J. G. Lockhart; Lord Iddesleigh; Sir Walter Scott; Robert Burns;* and *Prince Charles Edward* [*Stuart*]. He was aided in translations of the *Odyssey* and the *Iliad*. Later works include *The Making of Religion; James VI and the Gowrie Mystery; Magic and Religion; History of Scotland from the Roman Occupation;* and *Knox and the Reformation*. He died at Banchovy, Scotland, July 21, 1912.

Langevin (*länz-văn*), **Louis Philip Adelard,** was born at Saint Isidore, Quebec, on Aug. 23, 1855. In 1867 he entered the College of Montreal and spent eight years there. In 1882 he was ordained, and for three years was a missionary. In 1885 he became superior of the Grand Seminary at Ottawa and later was sent to St. Boniface as provincial superior of the Oblates of St. Mary's in Winnipeg. He was appointed archbishop of Saint Boniface, and was consecrated by Archbishop Charles Fabre of Montreal.

Langevin, Sir Hector Louis, was born in the city of Quebec in 1826. He was educated at Quebec Seminary, and was called to the bar in 1850. He edited several newspapers for some years, was mayor of Quebec for three years, and was member of the executive council of Canada from 1864 to the union as solicitor-general and postmaster general. Appointed secretary of state of Canada in 1867, he became minister of public works in 1869. He was delegate to the Charlottetown union conference in 1864, to that in Quebec the same year and to the London colonial conference 1886-7 to complete the terms of confederation. One of the Fathers of Confederation. In 1871 he was sent to British Columbia to study its resources and requirements. and later was elected in succession to Sir George Cartier leader of the Conservatives in the Province of Quebec. He represented Dorchester from 1857 until the union and after the union until 1874, and was postmaster general in 1878 and minister of public works in 1879. He was sent on a mission to England in 1897 in connection with the proposed dismissal of Letellier de St. Just, the lieutenant-governor of Quebec, with the result that the home government admitted the right of the Canadian government to dismiss a lieutenant-governor for cause.

Lang'ley, Samuel Pierpont, an American astronomer, was born at Roxbury, Mass., Aug. 22, 1834. He was educated at Boston Latin School, and became a civil engineer. He was made assistant at Harvard Observatory in 1865, and afterward was appointed professor of mathematics at the United States Naval Academy at Annapolis. In 1867 he was made professor of astronomy at the Western University of Pennsylvania, and was placed in charge of the observatory at Allegheny. He became an authority upon solar phenomena, and invented an instrument, known as the bolometer, for measuring the slightest changes in temperature. In 1887 he was chosen secretary of Smithsonian Institution. Professor Langley was prominent and active in practical astronomical work for many years, wrote upon astronomy and physics, and among other honors obtained the Rumford medal from the Royal Society of London; a membership of the National Academy of Sciences; the presidency of the American Association for the Advancement of Science; and memberships of many scientific societies and associations, American and foreign. His published works embrace *The New Astronomy, Researches in Solar Heat, Experiments in Aerodynamics* and *The Internal Work of the Wind.* He died on Feb. 27, 1906.

Langs'ton, John Mercer, an American lawyer, clergyman and educator. He was born a slave in Louisa County, Va., Dec. 14, 1829, but in childhood was given his freedom. He studied theology at Oberlin College, Ohio, and afterward law, practicing from 1854 to 1869. In the latter year he was made professor of law in Howard University, Washington City, and in 1873 became dean of the faculty of the law department of the university. He was United States minister and consul-general at Haiti from 1875 to 1885, and after this was appointed president of a normal and collegiate institute for his race at Petersburg, Va. He was an orator of good ability, and in 1883 published addresses entitled *Freedom and Citizenship.* He died on Nov. 15, 1897.

Lan'guage, Teaching of. The general name for the elementary school-subject which is used to teach the command of the native or vernacular language. Broadly speaking, the language arts of the ordinary school include oral language, reading, written composition, penmanship, spelling and grammar. In the more restricted meaning language arts refer to the development of the child's power to express himself in speech and in written forms. The teacher faces two general problems in language instruction: (1) To extend the child's power to use language and (2) to correct his language errors. These problems require somewhat different methods of treatment.

Inasmuch as the child has considerable command of speech before he enters school, oral language is usually made the foundation for many of the other language arts — for reading, spelling and written composition in particular. Language cannot be taught successfully apart from experiences and the interpretations of experiences. An "enriched' course of study, one with much emphasis upon interesting and varied subject-matter, is regarded as one of the fundamental matters in giving children extensive power in the use of language, oral and written. Words, groups of words and sentences always stand for some meaning or experience. The experience may be concrete and real, it may be imaginary, or it may be the result of a relation or distinction given by the intellect or the feelings. The experience, of whatever form it may be, must have the language presented with it which is to express it. Good language teaching associates (1) language forms with (2) the meanings which a child has experienced and wants to express. The school guarantees the child a wider and richer experience, to make it possible for him to use more forms of speech. The use of interesting material from the other school-subjects and of material developed in the language period itself in the form of observation lessons, school excursions to points of interest, games, conversation work, story-telling, dramatization etc. is largely for the purpose of converting subject-matter into real experiences, that the children may have something vital to express. They readily acquire the language forms provided by the teacher, when they have something real to talk about.

Oral and Written Language. Written language is not merely a translation of oral language. There are fundamental differences between the two forms of expression which need to be kept in mind. Speech is more informal, spontaneous and unrestricted than is written language. The school can control the former much less readily, as the child speaks before he enters school and talks constantly outside of school after he has entered. Most of his writing is done in school under the supervision of the teacher where there is less opportunity for bad example and bad practice. In teaching children to speak correctly, the teacher will alternately work (a) to get the child to speak freely, when the teacher will disturb the child little with suggestions for better forms of speech, and (b) to get the child to put his attention on form, when the teacher will suggest more or less freely. These two methods will supplement each other. As written composition is a more deliberate and reflective matter, the teacher can use the latter method much more freely with the child's written work.

The same methods are used to make the experience vital both in oral and in written language. In addition to the means previously suggested for language in general, dictation, memorization of poetical and prose selections, paraphrase etc. are used to assist written work more particularly.

Grammar. The subject of formal grammar is much less taught than formerly. The aim is to get the child to use the correct form directly and habitually without the hesitation or deliberation which is incident to conscious use of grammatical rules and principles. The teacher gives outright the actual, correct expressions that are needed from time to time. The pupil's own usage is later made the basis for the inductive study of grammatical principles. Grammar as a subject appears but little before the seventh and eighth years, and then only the classifications essential to the guidance of oral and written expression are given. The logical treatment of grammar has been largely abolished from the best elementary schools. Along with it have gone "parsing" and much of the work in "conjugations." The analysis of language is restricted to that which will assist the child to speak and write correctly through habit, and without reasoning or reflection. Language is treated as an art; not as a science.

Correction of Language Errors. The methods of extending a child's power to express himself and those used to correct his language errors are different. In the case of the former no wrong association has been made as yet. There is no complication. The teacher's work is direct and constructive. In the latter case a wrong connection has been made, and it must be modified or another associated form substituted for it. All correction of errors must be accomplished by three steps: (1) The error or the departure from prevalent usage must be noted. (2) The form used must be verified or the other form, which is the correct one, must be determined. (3) The correct form must be made habitual through drill or practice. Many persons know the right usage but use the incorrect form, because they have not carried the work through the third stage and made it habit. With the youngest children the teacher should be responsible for all three stages. He will note the error, give the child the correct mode of speech, and see that he repeats it frequently enough, recalling its meaning with each repetition, so that it becomes fixed as a habit. Later the teacher can let the child take the responsibility for correcting his own errors. This should be done gradually. At first the child can be left to repeat the correction by himself; then he can be taught to acquire the right usage from his grammar, again repeating it by himself. Then he can be finally taught to become sensitive to the differences of usage between himself and others, his grammar verifying or correcting him; and if his own language is incorrect, he can fix the right form by repetition.

It will take time to correct any error. Even after the teacher's efforts have commenced, the child in his more unconscious and natural conversation will use the incorrect form. Later he will alternately use the right and the wrong form, mixing them. This is the promising period. Finally, if the practice in school or home be kept up, the correct form will come uppermost in ordinary, spontaneous conversation.

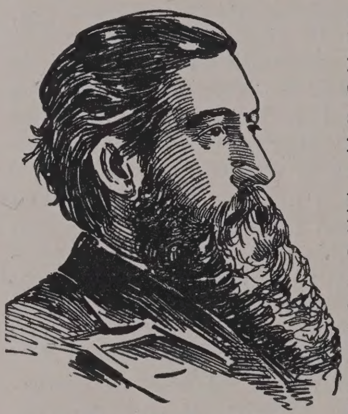
Owing to the difficulty of correcting errors of speech, the teacher or parent should select the most important ones and work on these, letting the others go for the time. Here the outside example and practice have to be overcome. More errors may be taken up in the same length of time in the case of written composition. Only one correct form should be brought into competition with an incorrect form. To use two correct ways of saying a thing means divided effort and slower attainment of corrected speech.

Foreign Languages. In some elementary schools, public as well as private, the foreign languages, particularly German and French, are begun in the grammar grades. In some schools the instruction begins as low as the fifth grade, but more generally in the seventh year. The prevalent idea that children can master a foreign language more easily at this time than later accounts for the practice. The presence of a large local foreign population frequently explains the distribution of such instruction. Such study usually begins with oral work, mainly conversation in the foreign language about subjects closely akin to the succeeding reading lesson. Then the reading of the primer follows. Further conversation with the text as the basis follows. Written composition later supplements this oral and reading instruction. Very frequently the composition follows its own set of exercises. It seems preferable so to use the reading and conversational material as to make the written work reënforce the other work. The reading and composition exercises are carefully graded with reference to the size of the new vocabulary to be learned and the grammatical difficulties involved. The place of grammar is in dispute. Some teach no grammar at all. Others teach a great deal of formal grammar. A middle course of developing the essential grammatical principles from the language already acquired by the children is also approved. In the teaching of the reading and writing of German there is a division of belief as to whether or not German script for writing and German print in the reading should be used with elementary children. The general practice favors the use of both from the beginning.

Lan'guages of the World. In speaking of the many languages in use, we must first revert to the period when speech was probably unknown and when, from the necessity of communicating wants and thoughts from one to the other, possibly or actually arose the use of certain sounds and inflections to convey certain meanings. The formation of words and sounds was the basis of the first languages, and from these, the Aryan and Semitic languages, are derived the modern languages. From the roots of these languages were taken the essentials for the formation of new ones as rapidly as people removed to new lands or formed new tribal relations, and it is safe to say that most European languages of to-day are in indirect descent from the Aryan. Yet the language to-day used by the greatest number of people, the Chinese, in its many and varied dialects, is as much a mystery as to birth and derivation as it was 1,000 years ago. The parents of the English of to-day are Anglo-Saxon or Old-English (which was derived from North Germanic) and Latin. The German is the improvement of the old German or Saxon dialects, and is now spoken over as widely a diversified territory as even English. The French language, often called the "polite" language on account of its wealth and beauty of expression, at one time was the language of the courts of Europe and to-day is considered essential to a finished education. It would be a difficult task to estimate the number of people using each separate language or to specify the number of languages now in use, as each language of the aboriginal or barbarous tribes of Asia, Africa and the Pacific islands, while only one in itself, has as many dialects as the people have tribes.

The English language with one exception, is first in the number of those who speak it. The Chinese in its various dialects is first, 270,000,000; the English is next, 111,000,000; the Hindu 100,000,000; Russian 80,000,000; German 75,000,000; French 51,000,000; Italian 33,000,000; Spanish 42,500,000. The English will be the language of the United States, Canada, Great Britain and Ireland, the colonies of South Africa and of the Pacific and of Australia. The extension of all other languages, excepting Spanish, is territorially limited. The latter has large space for increase in the Spanish-American states. Not only has English larger room for territorial expansion, but all the English nations will be maritime powers. This will make it the language of diplomacy as well as of commerce.

Lanier (*lă'nēr'*), **Sidney,** an American poet and critic, was born at Macon, Ga., Feb. 3, 1842. He graduated with honors from Oglethorpe College in 1860, and served in the Confederate army until 1865, being imprisoned for five months toward the close of his service. After the war he entered the law in partnership with his father, but subsequently devoted himself to music and literature. In 1879 he was appointed a lecturer in English literature at Johns Hopkins University, and was reappointed the following year, but ill-health necessitated his discontinuing active work. Some of his works are *The Centennial Ode*, *The Boys' Froissart*, *The Boys' King Arthur*, *The Science of English Verse*, *The English Novel and Its Development* and *Complete Poems* (published after his death). He died at Lynn, N. C., of consumption, Sept. 7, 1881. See W. H. Ward's *Memoir.*



SIDNEY LANIER

Lannes (*lȧn* or *lăn*), **Jean, Duke of Montebello,** a French marshal, was born on April 11, 1769, at Lectoure, France, the son of a livery stable-keeper. He entered the army in 1792, and, through great bravery in the Italian campaign, became general of brigade in 1796. He won the battle of Montebello (whence his title) on June 9, 1800, and took part at Marengo. He commanded divisions at Austerlitz, Jena, Eylau and

Friedland. When sent into Spain, he defeated General Castaños at Tudela in 1808 and took Saragossa. Next year he served on the Danube, commanding the center at Aspern (May 22), where both legs were taken off by a cannon ball. He was taken to Vienna, and died there on May 31, 1809.

Lan'sing, Robert, who succeeded Bryan (*q. v.*) as Secretary of State, is the son of a prominent lawyer of New York State and began his law practice with his father in Waterton, where he was born, October 17, 1864. He graduated from Amherst in 1886. In his practice he specialized in international law and showed high ability as a representative of the U. S. in the Fur Seal, Alaska Boundary and Atlantic Fishery Arbitrations—three of the most important international disputes since the Alabama Claims (*q. v.*). His wife is a daughter of John W. Foster (*q. v.*), who besides her social graces has much of her father's skill in diplomacy.

Lan'sing, the capital of Michigan, is located in Ingham County, on both sides of Grand River. It is 72 miles southeast of Grand Rapids and 85 northwest of Detroit. It is well-equipped with parks, and has electric railways and other adjuncts of a live modern city. It contains the state capitol, library, industrial school, agricultural college, school for the blind, a hospital and U. S. government buildings. It has many manufactures of agricultural implements, flour, stoves, machinery, beetsugar, canned goods, trunks, wheelbarrows, knit goods, carriages and wagons. It was settled in 1847, and at the same time made state capital, and became a city in 1859. Population 70,000

Lan'singburg, a town of New York, on the Hudson, 10 miles above Albany. It contains an Augustinian priory, and has extensive manufactures of brushes and oilcloth. It has recently been annexed to Troy.

Laöcoön (*lā-ŏk'ō-ŏn*), according to classic story a priest of Apollo, afterward of Poseidon, in Troy, married against the will of Apollo and warned the Trojans against the admission of the wooden horse. For these reasons he and his two sons were killed by two serpents that rose from the sea. The subject was made the theme of many Greek poems, and was treated by Vergil in his *Æneid.* One of the most famous ancient sculptures in existence represents the group. It was discovered at Rome in 1506, and was purchased by Pope Julius II. Afterward it was carried off by Napoleon in 1796, but was recovered in 1814. See Lessing's *Laöcoön.*

Laodicea (*lā-od-ĭ-se'ä*), the name of many cities, the most important being the one in Phrygia on the Lycus and the great commercial road. The district and city have been partially destroyed by earthquakes several times, and the city began to decay at the time of the Osmanli invasions, and now is a ruin, known as Eski-Hissar. It was one of the first seats of Christianity, designated as one of the seven churches of *The Apocalypse,* and the scene of important ecclesiastical councils in 363 and 476. It also was an important seat of art, science and philosophy.

Laos (*lä'ōs*), a large Indo-Chinese nation, occupies the northern and eastern provinces of Siam. The Laos are considered the original race of Siam, but have since 1828 been under Siamese government. They are semi-civilized, and are followers of Buddhism. They have domesticated the elephant and the buffalo, are peaceable and industrious, but are much engaged in slavehunting, and this with the sanction of the authorities. Their entire number does not exceed 1,500,000. In 1893 France acquired a large area of Siamese territory, which she erected into a protectorate, estimated to contain 98,400 square miles, with a population, approximately, of 650,000. The region is the rather inaccessible one of the Mekong River. A telegraph, however, connects Hué in Anam with the towns of the Mekong and these with Saigon. The cost of the Laos administration is borne jointly by Cochin-China, Tonquin, Anam and Cambodia (*q. v.*)

La Paz (*lä päz*), the chief town of a department of Bolivia, South America, lies at the foot of a valley, 11,952 feet above sea-level and is 42 miles from Lake Titicaca. It has a college, seminary, medical school and a handsome, unfinished cathedral; but, the houses being small and mostly built of mud, the city does not present an attractive appearance. The inhabitants, numbering 78,910, are almost all Indians or half-breeds, and carry on a large trade in copper and alpaca wool. The capital of the department is Sucré (population 27,080). The seat of government, however, changes. The department of La Paz (area 53,800 square miles) has a population somewhat in excess of 500,000.

Lap'idary, a cutter, polisher and engraver of small stones, particularly of gems. The stone to be prepared is taken in the rough and placed under the slicing mill, a circular iron disk about eight inches in diameter and 1-200 of an inch thick; and, revolving rapidly, the faces and tables of the stone are cut; then the roughing mill of lead smoothens the surfaces; and finally the polishing mill, formerly of pewter covered with rotten stone but now often a wheel of walrus hide, adds polish to the surfaces. All these appliances are worked as machines, and thus effect more accurate cutting.

La'pis Laz'uli (Latin for azure stone), a mineral of beautiful azure color, which varies much in its degree of intensity. Lapis lazuli is often marked by white spots and bands. It is found in Siberia, Tibet, Chile and California. The finest specimens are brought from Bokhara. It was the only stone of value known to the Egyptians under the Pharaohs. It is much used in ornamental and mosaic work. The principal use of the stone has been that of making the blue ultramarine pigment (paint). As the best stones yielded only two or three per cent., the cost of the purest article sometimes was over $100 an ounce. Now, however, the substance of which the mineral is composed is made artificially on a large scale and at a low cost. There remains no occasion for using natural ultramarine as a pigment.

La'place', Pierre Simon, a French mathematical astronomer called the Newton of France, was born on March 28, 1749, and died on March 5, 1827. He began by teaching mathematics in a military school at Beaumont, but through the influence of D'Alembert, he was shortly appointed to the *École Militaire* of Paris. His great work consisted in deriving all motions of all members of the solar system from dynamics alone. The results are his famous *Celestial Mechanics* (1799–1825). His contributions to mathematical physics also are of extreme importance; for to Laplace we owe the beautiful method of *Spherical Harmonics* and the powerful *Potential Function.* Laplace perhaps is best known by his bold and attractive hypothesis that the solar system is merely a condensed nebula — the so-called nebular hypothesis. Although undoubtedly anticipated by Kant in the general idea, Laplace offered so powerful evidence for his view that we may fairly call the theory a Laplacian one. Within the last few years this hypothesis has been ably criticised by Professors Chamberlain and Moulton of the University of Chicago. See Professor Moulton's article in the *Astrophysical Journal*, Vol. XI., pp. 103–30 (1900).

Lap'land is a country known neither politically nor geographically; it is a name applied collectively to the semiarctic region in the north of Europe, inhabited by the Lapps. It is bounded by the Arctic Ocean on the north, the Atlantic on the northwest and the White Sea on the east. Its southern boundary is about the 66th degree of latitude; but Lapps are found as far south as 63 degrees in Norway and Sweden.

Surface. Scandinavian Lapland is rough and mountainous. In Russian and Finnish Lapland the country becomes more level, lakes and rivers more numerous and marshes abundant. Some of the lakes are large, Inara being 1,147 square miles in area, Imandra 65 miles long and 9 wide and Nuot 35 miles long and 7 wide. Several long rivers, the Tana, Tulom and Kemi, flow through the country into the Arctic Ocean and the White Sea.

Climate. During the short summer of three months the sun never sinks below the horizon, and during seven or eight weeks of the excessively cold winter the sun never appears above the horizon, thus adding comparative darkness to a cold of 60 degrees below zero.

History and People. The total Lapp population is about 25,000, distributed 15,000 in Norway, 7,000 in Sweden, 800 in Finland and 2,000 in Russia, many in the north being descended from criminals transported from Denmark 300 years ago. The Lapps are of a race closely related to the Finns, and are the smallest people of Europe, being only from four to five feet tall, spare of body, dark, with bristly hair and short, often bandy legs. The mouth is large, with thick lips, and the eyes small and piercing. They are usually classed as mountain, river, forest and sea Lapps. The mountain Lapps are wanderers, moving from place to place with their reindeer herds, which form their only wealth. The sea Lapps live along the streams and ocean, and subsist by fishing. The river and forest Lapps also wander, but have settled, keep domesticated animals and hunt and fish. The reindeer furnishes the Lapps with food and clothing, and serves as his beast of burden. There are about 400,000 reindeer in Lapland. In personal habits the Lapp is anything but cleanly All profess Christianity. The Norsemen treated the Lapps as a subject race as early as 800, and reconquered them in the 14th century. The Russians did the same in the 11th and the Swedes in the 16th century. From the 13th to the 17th century the Birkarlian Swedes kept them almost in slavery. To-day, however, they are the recipients of every kindness. See Du Chaillu's *Land of the Midnight Sun.*

La Pla'ta, the chief city of the province of Buenos Aires in the Argentine Republic, was founded in 1882, after Buenos Aires city was made the federal capital (1884). The city was quickly built, with wide streets and many public squares, the center being lighted by electricity. The city has a capitol and government buildings, an observatory, several chapels, a railway station and a provincial university. It also has a manufactory of cotton and woolen tissues. A canal connects the outer harbor at Ensenada with La Plata. Population, including Ensenada (on the estuary of the Plata) and a country district of 60 square miles, about 150,000.

Laramie (*lăr'ȧ-mē*) **City, Wyo.,** county-seat of Albany County, on the Union Pacific Railroad, has the finest situation of any Wyoming settlement, being 7,122 feet above the level of the sea. It lies 40 miles northwest of Cheyenne, and is a point of supply for widely-scattered ranches and mines, and has large machine shops, rolling mills, glass works and other industries, telephones, electric lights and water-works. It is the seat of the University of Wyoming, the state fish-hatchery, the agricultural experiment station and the state penitentiary. It has admirable public schools, and contains public and college libraries, St. Joseph's Hospital and several churches. It was laid out in April, 1868, when the railroad reached this point. Population 8,237. Fort Laramie was built in 1834 by Sublette, rebuilt two years later by the American Fur Company, and sold to the government in 1849. Laramie Peak rises 11,000 feet.

Laramie, a river rising in northern Colorado and flowing northeast through southwestern Wyoming, enters the north fork of the Platte at Fort Laramie after a course of about 200 miles. It gives its name to a large county in Wyoming, to a plateau of 3,000 square miles in area and 7,000 feet in height, and to Laramie Mountains, bounding the plateau on the north and east.

Larch, the common name of the genus *Larix*, which belongs to the conifers. The larch is also often known as tamarack, and is peculiar among conifers in that its leaves are shed each year. The genus contains about eight species, which are widely distributed throughout the northern hemisphere, three occurring in North America. The single species of the northeastern United States is *L. Americana*, popularly called the tamarack, but also known as hackmatack. It is a slender tree, becoming about 100 feet in height, and occurs in swampy woods and about the margins of lakes. It is an ornamental tree, graceful in form, its slenderness enhanced by the dainty, threadlike character of its foliage, its color a cool, refreshing green. The tree is not found south of Illinois. It is associated with Hiawatha, who said:

Give me of your roots, O Tamarack!
Of your fibrous roots, O Larch Tree!
My canoe to bind together
That the water may not enter,
That the river may not wet me!
And the Larch with all its fibers,
Shivered in the air of morning,
Touched his forehead with its tassels,
Said, with one long sigh of sorrow:
Take them all, O Hiawatha!

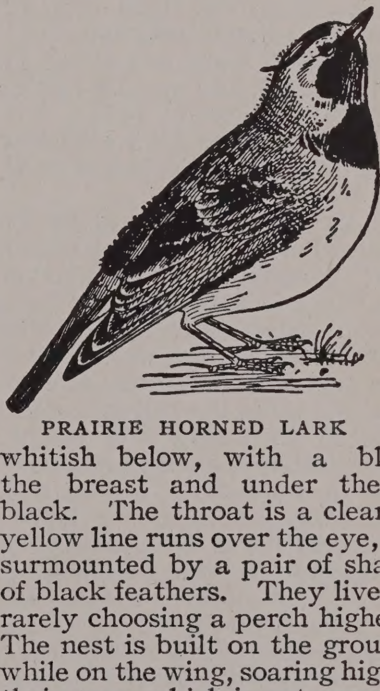
Tamarack wood, light brown in color, is resinous and durable, and is used for railroad ties and in ship-building.

Lar'com, Lucy, an American writer, teacher and poet, was born at Beverly, Mass., in 1826. After three years in school she became a factory-hand in a cotton-mill at Lowell. During this period she contributed to a local publication. When about 20, she came west and for three years attended Monticello Female Seminary in Illinois. Returning to Massachusetts, she taught for several years in the Normal Female Seminary and, later, in the Boston schools. For some time she was editor of *Our Young Folks.* She wrote *Ships in the Mist; Poems; An Idyl of Work; Childhood Songs; Wild Roses of Cape Ann* and *Other Poems.* She died at Boston, Mass., April 17, 1893.

Lare'do, Tex., a city on the Rio Grande, the capital of Webb County, connected with Nuevo Laredo, Mexico, by two bridges across the river. It lies 75 miles west of San Diego and 150 southwest of San Antonio, and is the center of an important area in the coal, iron and brick as well as wool-exporting trade. The growing of Bermuda onions has been a steadily increasing industry, since the Laredo vegetable is superior to the original article. Laredo also has considerable commerce with Mexico, and Nuevo Laredo (Mex.), just across the border, has 8,000 people. Laredo was originally settled by Spaniards and Mexicans as a frontier town of Mexico. Population 30,000

Lares and Penates (*lā'rēz and pē-nā'tēz*), the tutelary or protecting divinities supposed to preside particularly over the destinies of the household, usually having a place in images on the hearth. The Lares originally were of the Etruscan religion and the Penates were of the times of the old Latins, but later these terms were used together as denoting the worship of ancestors and the home altar, the hearth.

Lark, the popular name of birds common in Europe, Asia and Africa. There is one species in Australia. The European skylark is the lark of the poets. It sings blithely and rapturously while on the wing. An attempt has been made to introduce it into the United States, but it is very destructive to green crops and for that reason an undesirable addition to our fauna. There are about 100 different species of larks, but only one—the horned lark — lives in the United States. There however are several geographical varieties of this single species. They are about one fifth smaller than the robin, are brownish and sandy above and whitish below, with a black patch on the breast and under the eye, the tail black. The throat is a clear yellow, a pale yellow line runs over the eye, and the head is surmounted by a pair of sharp horns made of black feathers. They live on the ground, rarely choosing a perch higher than a fence. The nest is built on the ground. They sing while on the wing, soaring high and repeating their song, which is not very attractive, several times before alighting. The one called the shorelark belongs to northeastern North America, but sometimes wanders as far as North Carolina, and is a familiar winter resident in the eastern coast-states. The prairie horned lark is found much farther south, but though once belonging exclusively to the prairie country is now widely distributed. See MEADOWLARK.



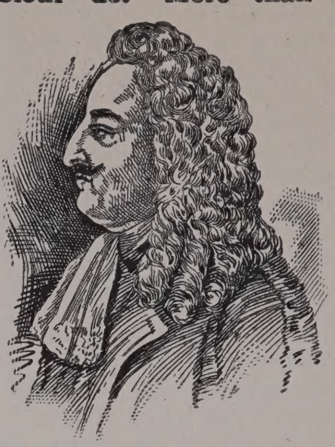
PRAIRIE HORNED LARK

Lark'spur, a showy garden and wild flower, grows in the temperate and cool regions of the northern hemisphere and comprises both annual and perennial species. The lovely flowers are deep blue or purple, having many blossoms along a slender stem. The rocket larkspur of Switzerland and the branching larkspur are annuals, and the barlows and the great flowered are perennials. Many new species have been developed by cultivation. The stavesacre yields an alkaloid extract called delphinine, which is very poisonous even in small doses. There are over 25 species in the United States. Dwarf larkspur, known as stagger-weed because of its effect on cattle, grows in open woods, and bears long loose clusters of vivid blue or white flowers. Growing in the same range is the tall larkspur, which sometimes reaches a height of five feet, its flowers of intense blue being on long terminal racemes. The Carolina larkspur, from one to three feet in height, has blossoms of blue, pink and white.

La Rochefoucauld (*la rôsh'fo͝o'kō'*), **François, Duc de,** was born at Paris, Sept. 15, 1613, of an old family. His father was made a duke by Louis XIII in 1625. He entered the army when a boy, and at 17 was present at the siege of Casal. He supported Queen Anne against Richelieu, and consequently was driven into exile from 1639 to 1642. He returned to the country, and wrote his *Memoirs.* On Mazarin's death in 1661 he returned to court, and met De Sablé. His *Moral Maxims* appeared in 1665. His last years were brightened by his friendship with Mme. de La Fayette, which lasted until he died at Paris, March 17, 1680.

Lar'va (plural, larvæ), the young of nearly all insects, the larval stage being that which follows the hatching of the egg. The larvæ of beetles are grubs; of flies, maggots; of butterflies and moths, caterpillars. The term worm is misleading; worms are not insects, and do not, like larvæ, come from the egg. Some larvæ are almost like the full-grown insect, as grasshoppers, wanting only wings; others appear very unlike the adult, as caterpillar and moth or butterfly. Larvæ live only to eat, numerous insects in the larval state working untold harm on vegetation. As the creature grows too large for its skin, this is dispensed with; molting, as the process is called, taking place from four to 20 times, according to the species. Cast-off skins are frequently to be found. See METAMORPHOSIS. Consult Cragin: *Our Insect Friends and Foes.*

Lasalle (*lȧ-săl'*), in Lasalle County, Ill., is at the head of steam navigation on Illinois River. It also is the terminus of the Illinois Canal, and has fine railroad connections. Bituminous coal is mined, there are manufactories of glassware, castings, brick and metallic ware, but the town is most noted for its zinc works, rolling mill and large cement mills. Lasalle was first settled in 1837. Population 16,000



ROBERT LA SALLE

La Salle (*lȧ'sȧl'*) **Robert Cavelier, Sieur de.** More than two centuries ago the Mississippi Valley was the background for a group of picturesque heroes. Missionary and explorer they trod this wilderness, remote from the seaboard; raised the cross; unfurled the lilies of France; won the fealty of the red man as no man of Saxon blood ever won it; built their forts, did their deeds of daring with the gallantry and grace of romance; and vanished, to give place to the American pioneer. But, though they are gone, their names and the names of their kings and saints are preserved in city street and sylvan stream, in county and town, and the Father of Waters murmurs of them from St. Anthony's Falls to the Gulf of Mexico

Of all these figures the greatest was the one born Robert Cavelier, son of a rich, middle-class burgher of Rouen, Normandy, 1643. His was no mere adventure directed by chance, but a dream of vast empire. The title of Sieur de la Salle, by which he is best known, would seem to indicate noble blood and possessions, but it was acquired, probably, in Canada, whither he emigrated and held by grant a seigniory on a big island in Lachine Rapids above Montreal. It was also, possibly, a tribute to a man who was essentially an aristocrat in intellect and bearing. On his island kingdom in the St. Lawrence he long wondered whence came that wild flood of waters flowing exhaustlessly out of the west He made one expedition to the Ohio and thought it must flow into the Pacific and thus furnish the long-sought route to China. Joliet returning made it clear that the Ohio could be only a tributary of the continental river that flowed southward into the Gulf of Mexico. La Salle built a vessel at the head of Lake Erie and sailed to Green Bay, Wisconsin. He made his way over land to Illinois, built two forts west of Chicago, and sent an exploring party up the Mississippi under Father Hennepin. Support and supplies were withheld by jealous, petty officials in Canada. So La Salle leaving his lieutenant, Henri di Tonti, at Fort St. Louis on Starved Rock, went to France and got the ear of the king.

He had conceived the idea of exploring fortifying and colonizing the St. Lawrence and Mississippi basins and winning a fabulously rich empire for France with the help of friendly Algonquin tribes. He had gathered 20,000 Indians, numbering 4,000 warriors, around his rock of St. Louis. Louis XIV, *le grand monarque*, knew a great man when he saw him, and gave La Salle everything he asked for, but jealousy and malice prevented many things from reaching him. Three times he built up the structure that was to support New France; three times he saw the result of his toil and genius crumble into dust. Nothing daunted him or turned him from his purpose. Only death could defeat "the undespairing Norman."

With four laden vessels, soldiers, arms, colonists and supplies, he started on his return from the third voyage to France, coming by way of the Mississippi, at whose mouth he had planted the French banner in the spring of 1682. The naval commander, Beaujeu, carried the expedition past the river, whether by intent is a disputed question. Certain it is that he landed the company on the coast of Texas, 1,000 miles from Ft. St. Louis on the Illinois, in an unhealthy country, among hostile tribes and in Spanish territory, and sailed back to France. Battle, famine and disease soon decimated their number and bred mutiny. La Salle was assassinated on the bank of Trinity River, in March of 1687. Tonti's red warriors were scattered by the savage Iroquois.

Early in 1700 France took up La Salle's task, proceeding westward along the lakes and northward up the Mississippi. But Illinois, the connecting link in the imperial chain, was never reforged. No new Vulcan appeared. The disastrous end of La Salle's enterprise must, in part, be ascribed to his own character. Wrapped in his splendid dream, reserved and haughty, he gave his confidence, his love, to no one but Tonti. By his Indian allies he was worshipped as a superior being, but it was this all too patent superiority that was resented by his white followers. It is improbable that anyone beside Tonti was with him who was capable of understanding him and his magnificent plan. He had powerful enemies in Canada and in France who finally were able to thwart him. The malice and treachery that hunted him to untimely death undoubtedly changed the course of American history. See Parkman's *Discovery of the Great West* and Mrs. Catherwood's romance: *The Story of Tonti.*

Lassalle (*lä'sȧl'*), **Ferdinand,** the originator of the social democratic movement in Germany, was born on April 11, 1825, at Breslau, of Jewish extraction. He attended the Universities of Breslau and Berlin, afterwards going to Paris, where he met Heine. Returning to Berlin in 1846, he took part in the revolution of 1848 as supporter of a democratic republic, and spent six months in prison. In 1861 he published a legal work on the philosophy of law, called *System of Acquired Rights.* In 1862 his lecture on the working class called particular attention to his views, and in 1863 his *Open Letter* to a committee of workingmen at Leipsic still more clearly expounded his theories of a social democracy. His success encouraged him to found the Universal German Workingmen's association at Leipsic. He was mortally wounded in a duel, and died at Geneva on Aug. 31, 1864. See W. H. Dawson's *German Socialism and Ferdinand Lassalle* and George Meredith's *Tragic Comedians.*

Las'so, a thin, plaited rope of rawhide used for catching wild animals. One end is fastened to the saddle of the hunter, and the other, ending in a ring, forms a loose, sliding noose, which, after being whirled around in the right hand, is thrown over the object. In Mexico, where it is called *la reata*, and in the United States, where it is called a *lariat*, it often is made of plaited hair.

Last of the Mohicans, The, A Narrative of 1757 is a novel by Fenimore Cooper. It is a tale of the disappearance of the Mohicans, a tribe of Indians, before the inroads of civilization. See LEATHER-STOCKING TALES.

Last Rose of Summer, 'Tis the. Words by Thomas Moore. Tune *The Groves of Blarney*, which is a variation of *The Young Man's Dream*, by R. A. Millikin of Cork. This beautiful song appears in the collection of Irish songs arranged for voice, piano, violin and 'cello by Beethoven. It also is the subject of Mendelssohn's *Phantasie in E, op.* 15, and is a leading feature in Flotow's opera of *Martha.*

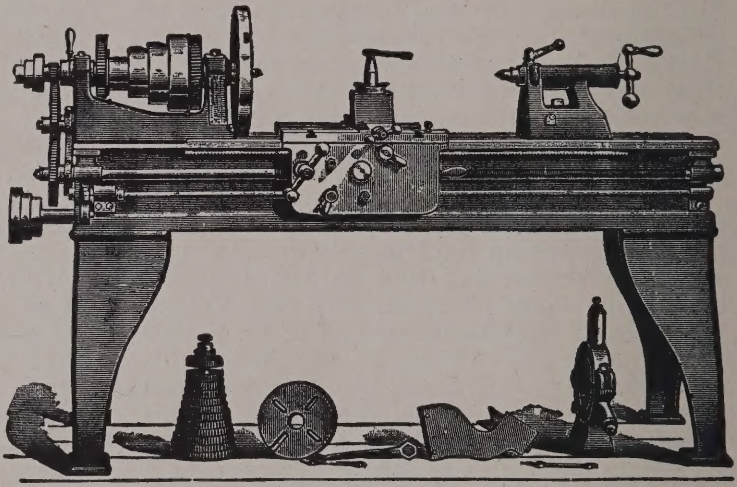
Las Casas (*läs kä'sȧs*), **Bartolome de,** bishop of Chiapa, in Mexico, called the Apostle of the Indians, was born at Seville in 1474. He studied at Salamanca, and with his father set out on the third voyage of Columbus, and in 1502 accompanied Nicholas de Ovando to Hispaniola. In 1511 he was sent to Cuba to help to pacify the island. But soon sympathy for its piteous condition moved him to go to Spain and ask for a commission to investigate the conditions. He further sought that negro slaves be imported to take the place of the Indians in the heavier work, and thus prevent their total extermination. He also attempted to take out Castilian peasants as colonists. Failing in this, he retired to a Dominican convent in Hispaniola to spend eight years in solitude and study. In 1530 he again visited Spain; and, after four years of missionary work in Mexico, Nicaragua, Peru and Guatemala, he returned to spend four more years in the hope of gaining his purpose. During this period he wrote *Twenty Reasons* and *Short Narrative of the Destruction of the Indies*, which has been translated into all European languages. He preferred the poor bishopric of Chiapa, and arrived at Ciudad Real, its chief city, in 1544. Here he persisted in his campaign against the allotments of Indians, but the revocation of the new laws by Charles V caused him to resign in 1547. In 1555 he prevailed upon Philip II not to sell the reversionary rights of the allotments. The restoration of the court of justice to the native Guatemalans was the last act before his death, which occurred on July, 1566. See *Life* by Helps.

Lat'eran, styled the Mother and Head of all the Churches of the City and of the World, in Rome, and now the church of St. John, surpassing St. Peter's in dignity, became imperial property in 66 A. D., and was given to St. Sylvester by Emperor Constantine. It was originally dedicated to the Savior, but Lucius II, who rebuilt it in the 12th century, dedicated it to St. John. The Lateran palace was the residence of the popes until the 14th century, but now is the property of the Italian government. The Holy Staircase, supposed to be the stairs of Pilate's house at Jerusalem, stands on the piazza of the church.

La'tex, the milky fluid which exists in plants belonging to several large families, of which the milkweed, bloodroot and spurge are well-known examples. It occupies special receptacles in the form of even or irregular branched tubes, abundant in all parts, from which it exudes when the plant is wounded. It is a watery fluid, containing a great variety of substances, as gums, oils, sugars, starch, coloring matters, caoutchouc. The caoutchouc, when it exists in proper form and amount, may be separated from the latex and is the source of the rubber of commerce, which is derived from several tropical trees. (See INDIA-RUBBER.) It is not unlikely that the latex tubes offer a means of transferring foods from one part of the plant to another.

Lathe. The lathe is the most common and most useful machine tool used in the mechanic arts. Indeed, until recently it practically was the only machine-tool found in the machine shop. It consists essentially of a rotating shaft or spindle, to one end of which is attached the work or piece to be turned. A cutting tool is forced against the work as it rotates, and thus all sections of the work can be brought to the form of a circle, but the circles may vary in size along the axis.

The spindle usually carries at its end a wheel having a plane side, called the face-plate. To this face-plate the work may be attached by means of bolts or by means of a single screw, as in wood-turning. Otherwise the work may be held in a "chuck" attached to the spindle and having jaws which clamp the work and hold it securely. Another method of holding the work is to pivot it between two cones called centers on the axis of the spindle, one rotating or "live" and the other still or "dead." The work is driven in this case by means of a clamp or "dog" pinching the work and projecting into a hole in the face-plate.



ENGINE LATHE WITH FITTINGS

For light work the cutting tool may be held by hand and supported by a tool rest close to the work. For heavier work and for more accurate work the cutting tool must be held rigidly attached to the *slide rest.* The slide rest can be moved slowly and steadily by turning suitable cranks by hand, or the mechanism moving the slide rest may be connected to the spindle of the lathe. In this way the slide rest is given an automatic motion proportional to the speed of the spindle which makes possible the cutting of screw threads with great facility.

The power may be furnished by the foot through a treadle or by an engine or other motor, either directly or through belts and shafting. The speed is determined by the work, turning iron requiring slower speed than either brass or wood. Lathes are of all sizes, from the little machines used in watch factories to the powerful machine-lathes used in turning flywheels. In the ordinary lathe the cutting is performed in circles about the axis passing through the lathe centers. The lathe has been adapted to turning other than cylindrical objects, by causing the tool to move, this motion being controlled automatically by a model. By this means such irregular objects as an axe-handle or a gun-stock can be turned on the lathe. This invention was made by Thomas Blanchard of Philadelphia in 1816. The potter's wheel, used from the most remote times, is supposed to be the origin of the lathe. Crude forms of lathes have certainly been used from the very earliest times, but it is only since the invention and wide use of the steam engine that the lathe has reached its present developed form.

La'throp, George Parsons, an American writer and editor, was born at Honolulu, Aug. 25, 1851, and was educated in Germany. He was assistant editor of the *Atlantic Monthly* from 1875 to 1877 and of the *Boston Courier* from 1877 to 1879. He was the author of *Rose and Rooftree; Afterglow; A Study of Hawthorne; An Echo of Passion;*

Newport; A Masque of Poets; Dreams and Days. His wife was Rose Hawthorne, a daughter of Nathaniel Hawthorne. He died at New York city April 19. 1898.

Lathrop, Miss Julia Clifford, humanitarian and social worker. She was born at Rockford, Ill., 1858; was graduated from Vassar in 1880. She was a member of the Illinois State Board of Charities, President of the Illinois Society of Mental Hygiene, and vice-president of the Chicago School of Civics and Philanthropy, and the Juvenile Protective Association.

Latimer, Hugh, Protestant martyr, born near Leicester, Eng., in 1490 or 1491, and educated at Cambridge. He became a Protestant and was brought into prominence as one of the committee to examine the validity of Henry VIII's marriage, reporting in favor of the king. In 1535 he became Bishop of Worcester. In 1536 he advocated the Reformation, but opinion changed and he was imprisoned in 1539 and 1546. During the reign of Edward VI he devoted himself to preaching, but in 1554 he was tried at Oxford, lay in a common jail for a year, and in 1555 was taken before a commission and found guilty of heresy, for which he was burned at the stake on Oct. 16, in the public square. See Tulloch's *Leaders of the Reformation.*

Lat'in Empire. See ROMAN EMPIRE.

Latin Literature. See LITERATURE.

Lat'itude in geography and astronomy may be defined in several different ways, each of which for practical purposes is equivalent to the other. Astronomical or ordinary latitude is simply the altitude of the celestial pole. Hence the German name for latitude, *polhöhe.* To say that the latitude of a place is the declination of the zenith of that place is strictly equivalent to the foregoing; or, again, latitude is the angle between the plane of the earth's equator and the plumb-line at the point under consideration. Geocentric latitude, as the name indicates, is the angle between a line drawn from the observer to the center of the earth and the plane of the equator. Geodetic latitude is defined in terms of the figure of the earth as computed by the geodesist. This figure is called the standard spheroid. The geodetic latitude of any place is the angle made by a line drawn normal to the standard spheroid at that place and the plane of the equator. At sea a sextant is used to measure the angular distance of the sun from the horizon at noon.

Lat'ter Day Saints. See MORMONS.

Latvia. The largest of three adjoining sections of Russian territory (Esthonia, Lithuania and Latvia) which, following the World War (*q. v.*) declared themselves independent republics.

Laud, William. Archbishop of Canterbury, was born at Reading, England, October 7, 1573. From the free school of Reading he went at 16 to Oxford, was ordained in 1601, and immediately became obnoxious on account of his enmity toward Puritanism, but earned friends by his learning, industry and churchmanship. Two of these friends were the Earls of Devonshire and Buckingham. Laud rose steadily from the holder of a simple living to become president of his college (1611), chancellor of Oxford (1630) and archbishop of Canterbury in 1633. After the assassination of Buckingham he became one of the first ministers of state, and sought the abolition of Calvinism and Protestantism. In Scotland his efforts to uproot Presbyterianism gave rise to the riot in St. Giles' Cathedral in Edinburgh, that led to the covenant and to the Bishops' War. This was followed by the session of the Long Parliament, which impeached Laud for treason on Dec. 18, 1640, and ten weeks later sent him to the Tower. He would not escape; and, after a long trial before a few peers, he was found guilty of an attempt to overthrow the Protestant religion and of acting as an enemy of Parliament. He was beheaded on Jan. 10, 1645.

Launfal (*lan'fǎl*), **Sir,** was the steward of King Arthur in the legends of the Round Table. To American readers the name is best known through *The Vision of Sir Launfal* of James Russell Lowell. This poem is remarkable for its noble praise of the month of June and for a lofty conception of democracy as founded on the common divine element in humanity. The fable suggests Tennyson's *Sir Galahad.* It appeared on Dec. 17, 1848.

Lau'reate, a poet attached to the household of English rulers. The early history is unknown, but Roger, king's minstrel, is said to have founded the monastery of St. Bartholomew during the reign of Henry I. Richard I carried William the Foreigner to Palestine to sing his songs, and Edward I and Edward II carried Robert Baston into Scotland, where he was captured and made to sing the praises of Scotch soldiers. The term was first applied to one who had carried off the laurel wreath at the university for studies or to any poet of great merit. The first laureate, as now understood, was Spenser, in the time of Elizabeth, but the first to receive official appointment by letters patent was Ben Jonson. The poets laureate and their eras are Edmund Spenser (1591–99); Samuel Daniel (1599–1619); Ben Jonson (1619–37); William Davenant (1638–68); John Dryden (1670–89); Thomas Shadwell (1689–92); Nahum Tate (1692–1715), Nicholas Rowe (1715–18); Laurence Eusden (1718–30); Colley Cibber (1730–57); William Whitehead (1757–85); Thomas Warton (1785–90); Henry James Pye (1790–1813); Robert Southey (1813–43); William Wordsworth (1843–50); Alfred Tennyson (1850–92); Alfred Austin (1896–1913); and Robert Bridges (1913–).

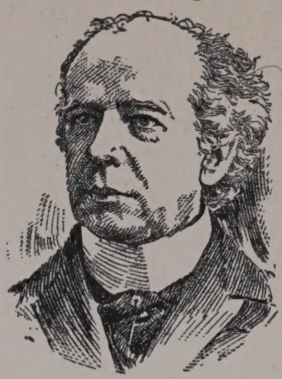
Lau'rel, a class of hardy trees containing several species, growing from a shrub of about 15 feet to a tree of about 60 feet. It has rather large, lance-shaped leaves, shining and leathery and clusters of yellowish-white or rose-colored flowers. The fruit is bluish-black, and, like the leaves, bitter and astringent, and is used medicinally. The leaves are used in cookery and for flavoring, and contain an oil known as oil of sweet bay. The light-brown wood is heavy and strong, and is employed for toolhandles. The great laurel is common south of Pennsylvania, very abundant and at its best in the high mountains of the Carolinas and eastern Tennessee. In park and garden it is cultivated in Europe and the United States. Our mountain laurel is found in dense thickets on the southern Appalachians. The beautiful flowers bloom in May and June. The ancient Greeks considered the laurel sacred to Apollo, and used entwined twigs to crown heroes and poets.

Lau′rens, Henry, an American statesman, was born at Charleston, S. C., in 1724. Soon after the commencement of the American Revolution he was elected delegate to the continental congress, and in 1777 became its president. In 1779 he was appointed minister to Holland, and while on his way was taken by the British and imprisoned for 14 months. After his release he, in conjunction with Franklin and Jay, signed a preliminary treaty with England in 1782 He died at Charleston, S. C., in December of 1792.

Laurens, John, American patriot and soldier, was born in South Carolina in 1756, the son of Henry Laurens. He entered the army in 1777, became aide-de-camp to Washington and the intimate friend of General Hamilton. He was wounded at Germantown, and distinguished himself in every battle in which he participated. Laurens was selected by Washington to undertake a special mission to France in 1781, but returned to take part at Yorktown in October. He was killed at the battle on Combahee River, in South Carolina, in August, 1782.

Lauren′tian Mountains, the elevated plateau, locally known as the Height of Land, which forms the watershed between the Hudson Bay and the St. Lawrence system and forms part of the archæan geological system of Canada. The range is composed of ancient crystalline rocks, and has a total area of over two million square miles. Its average elevation is about 1,500 feet, and its surface is nearly everywhere hummocky or undulating. In the Labrador peninsula the Laurentides assume a mountainous character, and rise 3,000 and, in places, even 6,000 feet.

Laurier (*lo′ri-ā*), **Sir Wilfrid,** G.C.M.G., P.C., a Canadian statesman, ex-premier of the Dominion and former president of the King's Privy Council, was born at St. Lin, Quebec, Nov. 20, 1841, and educated at L'Assomption College. He intended at first to become a priest, but studied law, and was admitted to the bar in 1865. He became a journalist, and because of articles in which he attacked abuses in the church was excluded from the Roman Catholic church. After serving in the Quebec Assembly from 1871 to 1874, he entered the Dominion Parliament, and in 1877 was appointed minister of inland revenue, a position which he held until 1878. In 1887 he was chosen to succeed Edward Blake as leader of the Liberal party in Canada's parliament, and became premier in 1896. He was knighted in 1897. By birth a French Canadian, he was a member of the Roman Catholic church and one of the most attractive as well as honorable and high-minded political personalities in the Dominion—an unrivaled orator and great parliamentarian, whom all men, without distinction of party or race, admired, whose purity of purpose and conduct all recognized, who had the well-founded confidence in all respects of the Liberal party. From Toronto University and Queen's University, Kingston, he received the honorary degree of LL.D.; while he was awarded similar honors from the Universities of Oxford and Cambridge. A pronounced imperialist, he was understood to look to the day when Canada should be directly represented in the parliament of the mother country. His administration (1896–1910) marks one of the most prosperous periods in Canadian history. He died in 1919.


SIR. W. LAURIER

Lava (*lä′vȧ*). Lava is the name applied both to molten rock and to the same material after it has solidified. Lavas differ greatly in composition. Hardened lavas also differ physically according to the rate of cooling, the pressure under which the solidification took place or the amount of vapors present. If lava cools so quickly that its constituents do not crystallize, it is glassy. Volcanic glass is often called obsidian. The surface of fluid lava is often so full of gas-bubbles as to be somewhat frothy. This solidified rock-froth is scoria. A special variety of scoriaceous lava is known as pumice, which often is so light that it will float on water. Lava occurs about existing or extinct volcanic vents.

Laval-Montmorency (*lȧ-vȧl′ môn-mō-rŏn′sē′*), **Francois Xavier de,** was born in France, March 23, 1622, and died at Quebec, May 26, 1708. He was chiefly known by one of his family titles, which was the Abbé de Montigny. He received the appointment of vicar-apostolic of New France and bishop of Petræa in 1658. He was consecrated at Paris, and arrived at Quebec in 1659. The seminary of Quebec was founded by him in 1659. Laval consecrated the church of Notre Dame, Montreal, in 1666, and was made titular bishop of Quebec in 1674, thus becoming the first Roman Catholic bishop of Quebec. Laval University in Quebec was named after him. See his *Life* by Louis Bertrand de 'a Tour (Cologne, 1751) and by an anonymous author (Quebec, 1845).

Laval University, the first institution for higher education in Lower Canada, was founded in 1852. The Seminary of Quebec, the pioneer institute, secured a charter from Queen Victoria which conferred the privileges of a university. Pius IX in 1853 gave the Quebec archbishops the right to confer theological degrees on divinity graduates from the new university. They are the visitors, a proof of the broadmindedness of the British government in permitting the Roman Catholic French of Canada to organize a university controlled only by archbishops of their own faith and blood. The visitor appoints the professors of theology nominated by the council of the university, and may veto all nominations and regulations. The rector, the superior of Quebec Seminary, is the highest officer. The rector and council administer affairs. The faculties are those of theology, law, medicine and the arts, each having its own council. It was not until 1866 that the theological faculty was organized. That of medicine opened in 1853, six professors of the Quebec School of Medicine becoming professors in the university. The faculty of law was the one for which most need existed, for there was no school of law in Quebec. It opened in 1854, but for several years teaching was limited to civil and Roman law. The faculty of arts, though outlined in 1855, was not opened for years. Laval has power to confer degrees in law, medicine and the arts, but not in theology, and did not receive all the rights of a canonical university until 1876. In 1870 the faculty of medicine was affiliated to the Royal College of Surgeons, London, England. In 1897-8 a bacteriological laboratory was installed, in 1899 one for experimental chemistry. The cabinet of physics contains thousands of instruments. The university has eight large and valuable museums. The library contains 150,000 volumes. The faculty consists of 50 professors, and the students number 444. Theology claims over 120, law 84, medicine and arts 140. There is a branch at Montreal, the statistics of which are not included here.

Lav'ender, a family of plants having the stamens and style surrounded by a two-lipped corolla, the upper lip two-lobed and the lower three-lipped. The common lavender grows wild on the mountains and hills of southern Europe, and is generally cultivated in gardens further north. It has a delightfully fragrant odor, and contains a great quantity of oil. The spikes and flowers are used in medicine as a tonic and nerve stimulant. The flowers are much used to scent wardrobes and in perfumery, and are blue-gray in color. The oil of the broad-leaved lavender is used by artists on porcelain and in making varnishes. It is made by distilling the flower with water; spirits of lavender by distilling them with spirits; and lavender water, the toilet preparation, by dissolving oil of lavender with other oils in spirits. Lavender gets its name from Latin *lavare*, to wash, because it was used in bathing.

Lavoisier (*lä'vwä'zyā'*), **Antoine Laurent,** the founder of modern chemistry, was born at Paris, Aug. 26, 1743. He devoted himself particularly to the study of chemistry, and was made an academician. To obtain means to carry on his researches, he became farmer-general (tax-gatherer) in 1769. While a director of the government powder-mills, in 1776, he discovered a way of improving the quality of the powder, and in 1791 was made a commissioner of the treasury. His most important contribution to science was the explanation of combustion and of the part that oxygen plays in the composition of substances. The popular hatred of farmers of taxes during the reign of terror was not tempered by his services to science and learning, and he died by the guillotine on May 8, 1794. His principal work is *Traitè Elementaire de Chimie.*

Law is a term of somewhat ambiguous meaning. One may speak of a law of nature, of a moral law or of the law of a state. In each of these cases, however, it is clear that the word relates to the prescription of a certain uniform kind of conduct. The notion of a law of nature may either imply a reference to a conscious being as lawgiver, or refer merely to the fact that a certain order has been observed in the occurrence of physical events. A moral law denotes a truth which is used to control human conduct. But *law* means especially the injunction of a certain kind of conduct upon the citizens of a state. In this sense law seems to have originated from the felt necessity of enforcing uniform customs upon the people of a state. Laws are not generally oppressive, because they usually represent customs rather than innovations. But so far as a government becomes distinguished from the people, it becomes possible for laws to represent innovations as well as customs.

Law is generally subdivided into *public law* and *private law.* Public law includes criminal law and constitutional law. Private law covers personal and family relations and affairs of property and contract. There also is *canon law*, which is still employed in the regulation of the functions of clerics, but has lost the importance attached to it in the middle ages. Modern law owes much to the Romans, who organized their laws into several codes, the most complete and celebrated of which was the code of Justinian, completed in 533 A. D. The famous code of Hugo Grotius, a Dutch scholar of the sixteenth century, also is of great importance as a factor in the development of modern systems. The codes and commentaries of Puffendorf, Vattel, Coke, Blackstone and others, with the famous *Code Napoleon* of France (1804–1810), should also be mentioned.

The technical name for the science of law is jurisprudence. Under jurisprudence the following types of law are recognized: (1) Admiralty law, which deals with crimes and contracts in which any member or branch of the navy is concerned. (2) By-laws, which literally are town-laws, but include the laws of societies and corporations. (3) Civil law, which is based on the whole upon Roman law and needs to be distinguished from criminal law. (4) Common law, very important in the United States and England, which is based upon judicial records and not upon statutes. (5) Constitutional law, by which the sovereign body in the state (in the United States the people, in England Parliament) regulates the government. (6) Criminal law which relates to crime and belongs to municipal public law. (7) Law of merchants, which is a principal part of the common law, founded on mercantile usages. (8) Law of equity, under which technicalities which might interfere with the course of justice (in civil suits only) are overruled. (9) Law of nations, which regulates international relations and is based in part upon custom, in part upon reason and in part upon treaty. (10) Martial law, which refers to military discipline, a state of hostilities or exceptional public danger. (11) Municipal law, a very general term of the statutory law regarded as regulating social activities. (12) Parliamentary law, which is the body of rules and restrictions by which the proceedings of deliberative assemblies are governed. A working acquaintance with these forms of law usually requires a three years' or four years' course of the most diligent postgraduate study. The procedure and usages of the courts are to be mastered only in the courts and by practice.

Law, John, originator of the "Mississippi scheme," financier and projector, was born at Edinburgh, Scotland, on April 21, 1671. At 20 he went to London, but was compelled to leave on account of a duel in which he killed his opponent. He then proceeded to Amsterdam, and there began studying the system of bank credits, and in 1700 he returned to Edinburgh to advocate the use of paper currency before the unfavorable Scottish Parliament. Law then traveled over the European continent, gambling and speculating, until in 1716 he founded a private bank in Paris with his brother William. In 1718 the duke of Orleans, regent of France, adopted Law's system of paper currency and issued enormous amounts which received great credit, while the national bonds remained below par. In 1719 Law originated the Mississippi scheme. This was a plan for colonizing and exploiting the region of the Mississippi, a sort of wild-cat project, the chief motive of which was to raise money to meet exigencies of the time in France. In the speculative mania that ensued stocks and shares soared to fabulous heights, and for a time the financial world of France lost all reason and parted from sober sense. Next year Law was made councilor of state and comptroller-general of finance; but when his system met with popular disfavor and his bubble scheme was pricked, he fled to Brussels, thence to England and finally to Venice, and there remained, poor and forgotten, until his death on March 21, 1729. See Perkins' *France under the Regency* and Mackay's *Extraordinary Popular Delusions.*

Law, Andrew Bonar, a British statesman, born in New Brunswick, Canada, Sept. 16, 1858. When he was twelve years old his parents removed to Glasgow, where he completed his education at the high school, learned the iron business, and became a successful manufacturer. In 1900 he was elected to the House of Commons as a Unionist, and in 1911 he succeeded Balfour as Leader of the Opposition. In the reorganized Asquith cabinet of 1915 he became Secretary of State for the Colonies. He declined the premiership on the resignation of Asquith, but accepted office under Lloyd George as Chancellor of the Exchequer. He held this post until the end of the war, and was also one of the five members of the inner War Council of the cabinet. Assigning poor health as a cause, he resigned the government leadership in the Commons in 1921, but in Nov., 1922, on the resignation of Lloyd George, he accepted the premiership.

Lawrence, an important manufacturing city in Massachusetts, one of the county-seats of Essex Co., is built on both sides of Merrimac River, 26 miles north of Boston, with which it is connected by two railroads. The river, which here falls 28 feet in half a mile, is crossed by two railroad and two other bridges and by a dam of granite, 900 feet long and forty feet high; canals on either bank conduct the water to the mills. The mills, some of which are among the largest in the world, manufacture cotton and woolen goods, cloth and paper, and engines, boilers, machinery clothing, hats, etc., are also produced here. The woolen goods industry is of first importance, employing more than 35,000 people. It is the worsted cloth manufacturing center of the world—and worsted, above silk, is the textile aristocrat. Lawrence has a common of 17 acres in the center of the city, around which are many noteworthy public buildings and churches. The public school system is admirable, and includes evening schools for the employed. Other institutions of which the city is justly proud are the high school, the free public library, the Orphan Asylum and a Home for Aged People. Population 110,000

Lawrence, Abbott, an American merchant and philanthropist, was born at Groton, Mass., in 1792, and died in 1855. He acquired a large fortune, was elected to Congress and was one of the commissioners to settle the northeastern boundary question with Great Britain. Among his donations were $100,000 to Harvard College, to found Lawrence Scientific School, and $50,000 for model lodging houses. See Hunt's *Lives of American Merchants.*

Lawrence, Amos, a distinguished philanthropist and brother of Abbott, was born in 1786 and died in 1852. Having acquired an immense fortune, he devoted over $700,000 to charities and donations, benefiting among other institutions Kenyon and Williams Colleges and Bangor Theological Seminary. His son published his *Life and Correspondence.*

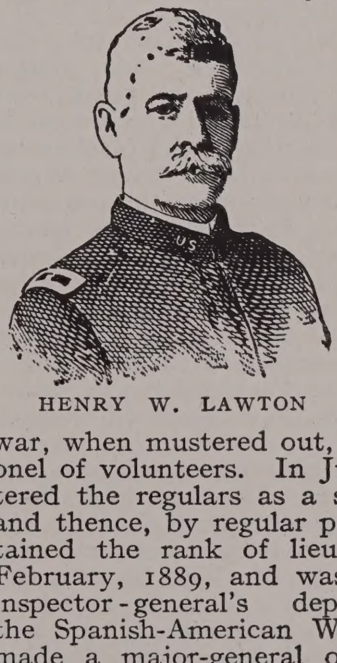
Lawrence, Sir Henry Montgomery, was born in Ceylon, June 28, 1806, and joined the Bengal artillery in 1823, taking part in many wars. In March, 1857, he was placed in charge at Lucknow, and when mutiny broke out he realized that it would spread over the whole of India, and consequently made great preparations. Thanks to his foresight the small garrison held out for four months, although Sir Henry was himself wounded by a shell on July 2, and died two days later. Lawrence was not only a soldier and statesman, but a philanthropist, having been the founder of the Lawrence Military Asylums at Punjab, Rajputana and Madras, to which he devoted his entire income.

Lawrence, James, an American naval officer, was born at Burlington, N. J., in 1781. In the War of 1812 he served under Commodore Decatur, and rose by brave conduct. In 1813, after a short engagement, he captured the British *Peacock*, and soon after was made captain of the *Chesapeake*. After he had been in command of its undisciplined crew for a few days, on June 1, 1813, he met the British *Shannon* just outside of Boston. After a hard fight he was mortally wounded and his ship was taken. This was when he said: "**Don't give up the ship!**" His remains were removed to Trinity churchyard, New York city, and a monument erected over them.

Lawrence, Sir Thomas, portrait-painter and president of the Royal Academy, was born at Bristol, England, May 4, 1769. At ten he began sketching in crayons, and at eighteen entered the Royal Academy as a student in oils. In 1791 he was elected an associate, in 1798 a full member. He was appointed limner to the king in 1792, and was knighted in 1815. In 1820 he succeeded Benjamin West as president of the Royal Academy. Although his work hardly rose above the conventional level, he was the most popular portrait-painter of his time. He died at London, Jan. 7, 1830. See Gower's *Romney and Lawrence* in the Great Artists Series.

Lawrence, Saint, whose day is August 10, was born, according to story, in Huascu, Spain, and became a deacon in Rome under Sixtus I. During the persecution of Valerian he was summoned before the prætor and ordered to surrender the treasures of the church, whereupon he handed over the sick and the poor. Persisting in his refusal, he was ordered to be broiled upon a gridiron. This martyrdom is authentic, and its probable date was 258 A. D.

Law'ton, Henry W., an American soldier, was born in Ohio in 1843, resided in Indiana, and in the beginning of the Civil War enlisted as a private. When honorably discharged upon expiration of enlistment he joined the 30th Indiana volunteer infantry as first lieutenant. He was repeatedly promoted for gallantry, and at the end of the war, when mustered out, was a brevet-colonel of volunteers. In July, 1866, he entered the regulars as a second lieutenant, and thence, by regular promotion, had attained the rank of lieutenant-colonel by February, 1889, and was assigned to the inspector-general's department. When the Spanish-American War came, he was made a major-general of volunteers and commanded the second division at Santiago de Cuba, distinguishing himself in the battle of El Caney on July 1-2, 1898. He was ordered to the Philippines in January, 1899. Here he rendered conspicuous service, pushing his campaigns in northern Luzon with energy and effectiveness, fighting more than 20 battles and displaying the qualities of an able strategist and brave leader. He was killed on Dec 19, 1899.



HENRY W. LAWTON

Lay of the Last Minstrel. This is a beautiful story of border-life, told in irregular stanzas, full of force and fire, by Sir Walter Scott. The poem deals with the healing of a border-feud. Some of its best features are the description of the life at Branksome Hall, the story of the ride of William of Deloraine, the faithful retainer, the delightful treatment of the supernatural which is involved and the admirable couplets which tell of the last minstrel himself and form a framework for the story.

La'yard (*lä'ärd*), **Sir Austen Henry,** English traveler and diplomatist, was born at Paris, March 5, 1817, and passed his boyhood in Italy. At 16 he was sent to London to study law, but in 1839 he set out upon an overland journey to Ceylon. On the banks of the Tigris he saw Birs Nimrûd, the supposed site of Nineveh, and in 1845-47, with the financial aid of Lord Stratford de Redcliffe and £3,000 voted by Parliament, he excavated and found the ruins of four palaces, from which he sent many carvings and basreliefs to the British Museum. He published *Nineveh and Its Remains* in 1849 and *Monuments of Nineveh* in 1853. During the next 40 years he received many honors, served the state and won distinction not only as a public man but as a student of the fine arts. He died at London on July 5, 1894. See his *Autobiography.*

Lay'ering, a method of plant-propagation (*q. v.*), depending on some plants' natural habit of sending out roots from the joints or tips of branches which come in contact with the earth, as the black raspberry. The procedure is to cover a portion of the branch and, after the roots are well-established and independent shoots are sent up, to cut the branch connecting with the parent plant. "Mound" layering is a modification of the process, in which the old plant is cut off close to the ground and the "stool" covered with earth. The new shoots, sending out roots at their lower joints underground, may be cut off as separate plants.

Laz'arus, St., Order of, a religious and military order which dates its origin from the first occupation of Jerusalem by the crusaders. Its primary object was the succor of the leprous, of whom Lazarus was regarded as a patron. After the expulsion of the crusaders Louis VII (1253) gave its members the lands of Boigny near Orléans, France, and a building at the gates of Paris, used as a leperhouse for the poor of the city. Pope Alexander IV confirmed the order in 1255. From the disappearance of leprosy and from other causes the order was gradually changed to a purely civil corporation. In 1572 it was joined by Pope Gregory XIII with the Order of St. Maurice of Savoy. In 1608 it was united with the order of Notre Dame de Mont-Carmel. At the Revolution it was abolished, but it was reintroduced at the Restoration, although at present it is not recognized. In 1633 the buildings of the priory in Paris were given to St. Vincent du Paul for the use of the fathers of his mission who from this came to be known as Lazarites.

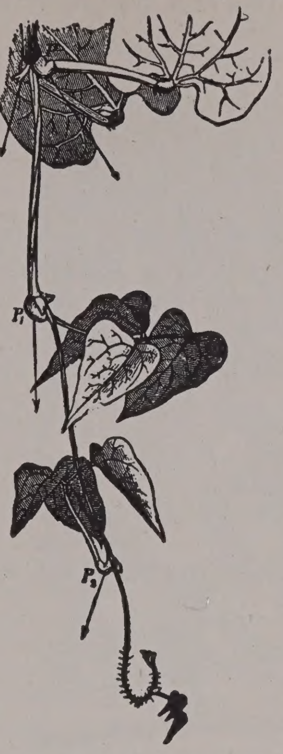
Laz'zaro'ni, Italian for lepers, until lately were a separate class living in Naples, with no houses or occupations, but employed as porters, vendors or messengers, and often begging. They took aggressive parts in all the revolutions of Naples, and formerly elected a chief every year.

Lea, Henry Charles, publisher and author was born at Philadelphia, Sept. 19, 1825, and succeeded to the business of the publishing house of Mathew Carey and Sons. He has written extensively on European mediæval history. Among his works are *History of the Inquisition of the Middle Ages, Historical Sketch of Sacerdotal Celibacy in the Christian Church, Chapters from the Religious History of Spain, History of Indulgences* and *Moriscoes of Spain.* Mr. Lea's conclusions as to celibacy have been called in question by eminent Catholic scholars. German savants regard his works as final authorities.

Lead is a bluish-white or grayish metal, becoming dull on exposure, very soft, malleable but not ductile, and possessing little tenacity. Its specific gravity varies from 11.352 to 11.365, and its melting point is 633° F. It is one of the metals known in very early times, being mentioned in *Job xix: 24,* and articles made from it by the Romans, some of them bearing inscriptions, as water-pipes, tanks, weights and rings, are still preserved in museums. It can be forced through a perforation when heated below its melting-point, as in making rods for rifle-balls and pipes. The action of water upon lead is important in that so much lead is used in water-service of almost all kinds; and salts of lead, dissolved even in very small quantities, form a cumulative and very dangerous poison. Water that has been standing in a lead pipe, therefore, should never be used for drinking. Lead in its native state is seldom found, the metal being chiefly obtained from galena, a sulphide of lead. There are several oxides of lead, two of which, plumbic oxide and red oxide, are used in the arts. Ordinary lead oxide (massicot or litharge), from which red lead, another oxide, is manufactured, is obtained in a yellow powder by heating lead to a dull redness in a current of air and grinding the product. Lead peroxide, with sulphur and other ingredients, is used for tipping some kinds of matches. White lead is a substance much used as a basis for paints, for a cement and for pottery glazes. To manufacture it, the lead is cut into different forms, placed in pots containing a little weak acetic acid, and the whole surrounded by spent tan-bark or horse-refuse. The heat from these evaporates the acid, which, with the air, changes the surface of the lead to an acetate, this in time being converted into a carbonate by the action of the carbonic gas from the hot-bed. The chief ore from which lead is obtained is galena. This is found through almost all of Europe and in many states of the Union, the largest deposits worked being in Idaho, Utah, Montana and Colorado. For ordinary lead-smelting the ore is crushed or almost pulverized by machinery, and placed upon the bed of a reverberatory furnace. A part of the ore becomes an oxide, and some of it a sulphate, while sulphurous gases pass off. When the furnace-doors are closed and the mass is melted, the oxidized parts and the remaining sulphide react upon each other, forming sulphurous acid and metallic lead. Toward the end, some lime is thrown into the furnace to prevent the slag becoming too fluid, and the melted lead flows from the tap-door. Lead-ores are often smelted in blast-furnaces, particularly for the sake of obtaining the silver in the ores or in other ores mixed with them. The silver then goes into the metallic lead. Lead is used in many alloys — with antimony to make type-metal or with tin for solder and for the manufacture of pewter, Britannia metal and the like.

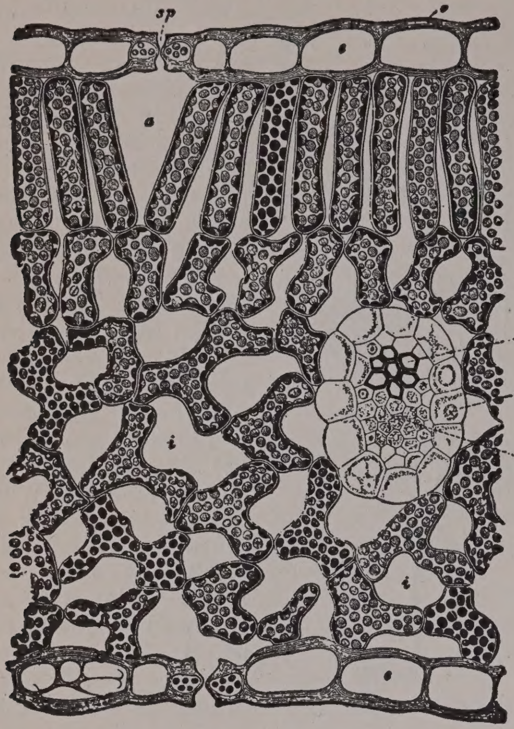
Lead′ville, a city of western central Colorado, the silver-mining center of the state and the county-seat of Lake County, is an important mining-town, situated in a valley 10,200 feet above the level of the sea. The city is located on California Gulch near Arkansas River, on the Denver and Rio Grande; Colorado Midland; and Colorado and Southern railways. The mines produce gold, silver, iron, copper, zinc, bismuth and lead, the latter to the extent of 70,000 tons or more per year. The town was incorporated in 1878, and contains many smelters, one of which is the largest in the world, stamp mills for crushing ore, iron foundries, a government fishhatchery, besides manufacturing machinery, jewelry and novelties. It has several fine churches, an excellent public-school system, which includes an high school, two banks, and is a modern and well-improved city. Pop. 7,508.

Leaf. Leaves are expanded organs of the higher plants for the purpose of displaying green tissue to the air and sunlight. These organs are found in fern-plants and seed-plants, and very simple leaves also appear among the mosses and liverworts. The leaves of the two higher groups are exceedingly variable in form, but are of very uniform general structure. The ordinary leaf consists of three main parts: (1) the blade, that is, the essential expanded part; (2) the petiole, the stalk upon which the blade is produced, and which may or may not be present; and (3) the stipules, pair of more or less conspicuous appendages at the point where the petiole joins the axis, which may or may not be present. A cross section through an ordinary leaf reveals three distinct regions: (1) the "epidermis" of the upper and lower surfaces which usually consists of a single layer of colorless and close-set cells; (2) between the two epidermal layers the "mesophyll," the tissue whose cells contain the green chloroplast; (3) the cut ends of the "veins," which penetrate among the mesophyll cells. The epidermis is a protective layer, and through it the mesophyll cells carry on exchanges with the outside world. In the epidermis the peculiar breathing-pores or stomata are developed. (See EPIDERMIS.) The mesophyll is the working tissue of the leaf, and in ordinary horizontal leaves its cells are arranged differently on the upper and under side. Those next to the upper epidermis are elongated and stand endwise, being close together and forming the so-called "palisade tissue." The mesophyll cells on the under region of the leaf are loosely arranged, leaving large intercellular spaces, through which there is a free circulation of air. The stomata open chiefly on the under surface of the leaf and into this system of intercellular passage-ways. The veins are conducting tissues, carrying materials from the stem into the mesophyll and receiving elaborated foods in turn from the mesophyll to be distributed to other parts of the plant. The leaves of seed-plants are often divided into two groups on the basis of the arrangement of the veins. In the monocotyledons, represented by grasses and lilies, the venation is said to be parallel, that is, the veins run approximately parallel from the base to the apex of the leaf. In the dicotyledons, on the other hand, the veins branch in various directions and the leaves are said to be net-veined or reticulate. The parallel-veined leaves are apt to be narrow and elongated, while the net-veined leaves incline to broader shapes. Among the net-veined leaves there are two types of venation: (1) the pinnate type, in which a



GEOTROPIC CURVATURE OF LEAVES

single very prominent rib called the midrib, runs through the midst of the leaf, and from it arises all the rest of the vein system, as in the case of the beech or peach; and (2) the palmate type, in which several main ribs arise together and spread out in fan shape, giving rise to a broader leaf, as in the maple. When such leaves become compound, the leaves are said to be pinnately compound or palmately compound. A great many names have been applied to the forms of venation, but they are of no great importance. The great value of the leaves of higher plants is indicated by the fact that they are the special organs for the display of green tissue, and this green tissue is concerned in the vital process known as photosynthesis.



Section of leaf, showing epidermis above and below (*e*), stomata (*sp*), palisade layer (*a*), spongy layer (*i*), and a single veinlet.

League of Nations, an international organization, provided for by the Treaty of Versailles, which was created for the purpose of "promoting international co-operation and achieving international peace and security." The headquarters of the League are situated at Geneva, Switzerland. Its covenant was effected on June 28, 1919. The principal organs through which the League operates are the Council, which is composed of fifteen members, (five permanent members and, since 1933, ten non-permanent members) representing the "allied and associated powers," convening in January, May and September of each year; the Assembly, comprised of representatives of all member nations; the Secretariat, consisting of a secretary-general, Joseph A. M. C. Avenol of France, and his staff which sits at Geneva; the International Labor organization, and the Permanent Court of International Justice which holds session at the Hague.

Membership in the League is open to the allies who signed and ratified the Treaty of Versailles and that group of nations which had been neutral during the War, if they acceded to the covenant, and "any fully self-governing state, dominion or colony" whose admission is agreed to by two-thirds of the Assembly. Under the latter category fifteen states have been admitted to membership. Switzerland was admitted to membership in 1920 under a special resolution which was drafted to comply with her insistence on her right to neutrality. The United States failed to ratify the peace treaty, as did also Russia, Ecuador and Hedjaz, and has never become a member of the League, although President Wilson, who represented the United States at the Peace Conference in 1919, was one of its strongest advocates.

The members of the League agree not to resort to war without first submitting their disputes to arbitration or to inquiry by the Council, and then not until after three months after such arbitration or inquiry.

The world-wide economic depression has taken its toll of the League as it has of other fields of endeavor. The expenses of the League are operated under a budget, each nation being apportioned an assessment on the basis of its national budget expenditures. On March 31, 1933, a report disclosed a total of twenty-six delinquent nations for a total of $5,062,753. The largest single debt owed to the League is that of China which totals $2,194,401. The greatest European debtor is Germany who has never paid its assessments.

The proposed budget of the League for 1934 totals $6,130,000 (gold), which is approximately eight per cent less than that of 1933. In that year the operating budget totalled $7,167,202. These totals include funds for the World Court and disarmament appropriations.

The League came into official existence in October, 1919. The first meeting of the Council was held at Paris in January, 1920. Forty-one nations were represented at that first meeting. In 1933 the membership consisted of fifty-seven nations. During the fourteen years of the League's existence, it has effectively solved international disputes, promoted health and brought better relations to bear between labor and capital, and has carried out the terms of the Treaty of Versailles concerning the several mandated territories. The most outstanding international disputes which have been settled by the League of Nations are: (1) the dispute between Finland and Sweden over the Aaland Islands; (2) the Polish-Lithuanian difficulties over Vilna; (3) The Polish-German dispute concerning the division of Upper Silesia; (4) the Albanian boundary problem between Italy, Greece, and Yugoslavia, and (5) the Czechoslovakian dispute over boundaries with Hungary.

Early in 1933 the intervention of the League was requested in the dispute between Colombia and Peru over the sovereignty of Puerto Leticia, a small Colombian city northwest of Iquitas on the Amazon River. That territory had been ceded to Colombia by Peru in a treaty between the two republics in 1922. Colombia ratified that treaty in 1925 and Peru in 1927. On September 1, 1932, a group of Peruvians seized the town of Leticia. After due investigation by a committee of the League of Nations, an international commission, acting under the auspices of the League, was sent to Leticia to administer affairs until a permanent peace has been established. Peru was ordered to withdraw her troops from Colombian soil. The arrival of the commission in Leticia on June 25, marked the first flying of an official League of Nations' flag. The white rectangle bearing the inscription, "League of Nations Commission for Leticia," in blue letters, was raised over the Leticia territory.

On September 22, 1933, the fourteenth session of the League convened at Geneva, Switzerland. It was presided over by Dr. Ludvig Mowinckel, Premier of Norway and Chairman of the League Council. The most outstanding problems demanding the consideration of the League were those of disarmament; Manchuria; Austro-German difficulties, the Gran Chaco and Leticia disputes, and the world control of narcotics.

One of the greatest achievements of the League in 1933 was the drafting of an international treaty for world control of narcotics. Such a treaty was deemed necessary because of the vast extent of illicit traffic in drugs. The Narcotic Treaty became effective on July 10, 1933. Twenty-nine nations signed the treaty, among them the United States, which gave the League a mandate to attempt to control the manufacture and distribution of opium and other narcotics. The terms of the treaty provide for the establishment of a board of eight members which will meet annually in Geneva. It will be the duty of this board to dictate just what quantity each nation may produce for the ensuing year, basing their decisions on estimates submitted by each of the various countries. The manufacture and distribution of drugs will be limited strictly to the world's medical and scientific demands. One of the interesting features of the treaty is that its conclusion resulted in the United States obtaining a seat of membership and a vote on the League Council for the meeting which convened in October, 1933. The purpose of granting a seat to the United States was to elect an American member to the permanent central opium board.

The Sino-Japanese conflict in Manchuria presented a serious and difficult problem for the League to solve. Based upon the report of the Lytton commission in 1932, which named Japan as the aggressor in the difficulties, the Assembly of the League passed judgment unanimously against Japan and suggested that the latter withdraw her troops from Manchuria and allow the country to be restored to the sovereignty of China. The report of the Assembly resulted in the formal notice of Japan on February 27, 1933, of her intention to withdraw from the League at the expiration of the two-year period provided for in the League Covenant.

The most important problem which faced the League, as well as the Disarmament Conference, was that of Germany. On October 14, Germany announced her withdrawal from the League because she was being denied equality of armaments. The issue of "equality of armaments" has been an irritating point to Germany since the signing of the Treaty of Versailles. German militarists, in particular, deeply resented the provision which they claimed put Germany in the rank of a second-class nation. The crisis was reached with the advent of Hitler and Nazism and the subsequent demand for arms and rearmament. Rudolf Nadolny, Germany's delegate to the League, gave formal notice of his country's retirement from the arms conference and its resignation from the League. In accordance with the provisions made in Article I of the League Covenant, a member must file intention of withdrawal two years before actual withdrawal occurs. Technically then, Germany is still a member, and will remain in such a status until October, 1935. The Article further provides that such withdrawal can only become effective provided that all of the international obligations under the Covenant of the retiring nation have been fulfilled at the time of withdrawal.

In January, 1934, the Council of the League of Nations appointed a committee to investigate conditions in the Saar Basin which may prevent a plebiscite from being fairly conducted there in 1935. The plan of government now in existence in the Saar Territory was consummated by the League. Nazi propaganda and terrorism have been steadily at work in this region in an attempt to influence the vote of the population in the territory in 1935. The report of the committee, which is composed of representatives from Italy, Spain and Argentina, will be heard in May of this year.

A League commission was dispatched to Buenos Aires in January in an attempt to effect an ultimate settlement in the Gran Chaco dispute between Paraguay and Bolivia. The proposals advanced by that commission were rejected by the Government of Paraguay in March. The commission was to be recalled from Buenos Aires and the League was at that time contemplating the advisability of holding a special session of the Council to cope with the situation.

After fifteen years of functioning, the League of Nations seems to be crumbling apart. The withdrawal of Japan and Germany from the League and Italy's threat of retirement unless the League is radically reformed, has given rise to a belief that the League of Nations has outgrown its usefulness in the world.

Premier Mussolini's demands for the reform of the League included:

(1) Divorce of the League from the Treaty of Versailles.

(2) Transformation of the Council into a super-committee of the Great Powers which shall dominate the decisions of the League.

(3) Abolition of the rule of unanimity in the Assembly whereby small nations are able to block the demand of powerful nations.

(4) Reform of the League's finances.

Mussolini's plan for reforming the League brought a cry of protest from other member nations. England and France are the only two great nations that are still members of the League, "surrounded by a number of little countries which do not amount to anything." This group of small nations offered severe criticism of the Italian project. Sweden was especially emphatic in denouncing the project, as were Czechoslovakia and Poland. The lesser European Powers feel that the League must be maintained in its present democratic form, that form in which it was originally organized. A reorganization of the League upon Fascist principles would establish a hegemony of the Greater Powers, a condition which the small member nations cannot regard with equanimity, realizing that a remolding of the League Covenant would result in the destruction of its democratic character and pave the way for treaty revisions. The small nations of Europe regard the League as their "bulwark, and they prize it as giving them in certain matters an equality with large nations." Great Britain, although admitting the need of Covenant revision, refused to entangle itself with the Italian project. France, through its Foreign Minister, Joseph Paul-Boncour, declared that it "has no intention of permitting any harm to the League." It cannot be denied that a crisis has been reached in the affairs of the League. A prominent editor in the United States recently said in an address, "As a great world force the League of Nations has practically disappeared, and we are back again really to the period of the balance of power, which is the very thing that brought on the previous war."

See DISARMAMENT CONFERENCE; COURT OF INTERNATIONAL JUSTICE; WORLD COURT; GRAN CHACO; ITALY; SAAR BASIN.

Leamington, the southernmost town in Canada, is situated on Lake Erie, thirty miles southeast of Windsor. It is served by two important railways, and has steamer service also. There is a beautiful municipal park which extends over an area of fifteen acres on the lake shore. Leamington is important as the site of the largest early vegetable hothouse in Ontario. Its manufactures include tobacco products, baskets, veneer, sashes, doors and foundry products, as well as the Canadian branch factories of the Heinz Company. In 1931, Leamington had a population of 4,902.

Leander (*lē-ăn'dẽr*), See HERO.

Leap Year, the name given to that one year in every four in which February is given twenty-nine days instead of twenty-eight. This year of 366 days is called leap-year because it leaps over a day more than the common year contains. Leap year is such a year of the current reckoning as is evenly divisible by four, except those years such as 1700, 1800, and 1900 that are divisible by 100 but not by 400. Many attempts were made, as the centuries of civilization and semi-civilization passed, to fix the precise length of the year by months. Julius Cæsar in his time attempted a thorough reform. But the Julian year had three hundred sixty-five and one-fourth days, and differed in excess by eleven minutes and about fourteen seconds from the true solar year, which consists of 365 days, five hours, forty-eight minutes and 46.05 seconds. So in the course of the centuries the equinox fell back perceptibly toward the beginning of the year because of this difference. It was chiefly to correct this error that Pope Gregory XIII reformed the calendar that is now called by his name. He suppressed ten days, and thus restored the equinox to the twenty-first of March. The Gregorian rule is that every year, the number of which is divisible by four without a remainder, is a leap year, excepting the centennial years, which are leap years only when divisible by four and also by 400. In this way 1600 was a leap year, but 1700, 1800 and 1900 were not. The length of the mean year fixed by the Gregorian calendar is 365 days, five hours, forty minutes and twelve seconds. This exceeds the true solar year by 25.95 seconds. But this amounts to only one day in 3,325 years.

Lease (*lēs*), the contract for the lettering of property. A lease may be for a certain term of years, or for life, or at will, and is usually granted for a specified rental or compensation. The word "lease" is used to indicate the contract, the act of securing the contract, and the term for which it is made. In nearly all of the United States, a provision has been adopted requiring leases for more than three years' duration to be in writing, and it is customary in most cities of the Union to sign a written lease for rentals of a year only. A long term lease gives the tenant more privileges than does a short term lease, as it makes him almost the owner of the property for the time being. In the case of firms and corporations, leases for ninety-nine years are not uncommon. The written lease contains the description of the property, the specifications, dates and rental, and also a list of restrictions and agreements binding the owner and the tenant, and clearly defining the rights and privileges of each. Of the two parties concerned, the owner or agent and the tenant, the one granting the lease is called the "lessor" while the one to whom it is granted is called the "lessee."

Least Action, in dynamics, an important but little understood principle. Its usefulness lies in its generality and in the fact that it points out the direction in which a change takes place. It appears to be very nearly equivalent to the very fertile principle that the potential energy of a system tends to become a minimum. Tait defines the "action" of a particle as twice the time integral of its kinetic energy, calculated from an assigned epoch; and then proceeds to state *the principle of least action* as follows: "If the sum of the potential and kinetic energies of a system is the same in all its configurations, then of all the sets of paths by which the parts of the system can be guided by frictionless constraint to pass from one given configuration to another, that one for which the action is least is the natural one, or requires no constraint."

Leather (*lĕth'ẽr*) is made of the skins of animals, prepared by tanning, so as to give them greater strength and toughness, render them unchanged by action of water and stop the tendency toward decomposition. This process is older than can be conjectured, as fragments of Egyptian tanned skins exist which were prepared not later than 900 B. C. There are three methods by which leather is now prepared: first by tanning or treating with tanbark or other vegetable compounds; second, by tawing or treating with alum, bichromate of potash or other mineral salts; and, third, by shamoying or treating with oils. Of these the first is by far the most used. The skins consist chemically of a fibrous substance, which on being boiled reduces to ordinary gelatine and is called *collagen*, and of an interfibrous substance called *coriin*, which cannot be dissolved in water; the combination forms tanno-gelatine, the active principle and base of tanned leather. Although all skins can be tanned, the ones ordinarily used are those of animals which have been killed for other purposes, those of the larger animals being called hides and those of the smaller, skins. The process of tanning a hide for sole leather, described shortly, begins by softening the hide in water, then heating it slowly until the first stages of decay will allow the hair and outer layer of skin to be easily removed, after which it is suspended in a tan-pit containing a weak solution, where it is turned two or three times a day, and removed successively from one pit to another, each containing a stronger solution than the preceding, until the last pit, where the hide may remain for five or six weeks. It is then taken out and beaten to harden it, oiled, and finally rolled to give it a smooth and finished appearance. To dress leather, the flesh-side is smoothed and pared down to give it a uniform thickness. Then it is softened in water and a preparation of tallow and cod-oil is rubbed over it. As the skin dries, the oil sinks into it and renders it smooth and pliable. Morocco and Russia leathers, as now named, are mere names to denote the finish and appearance, not the place from which they came or a particular kind of skin. The tawing process is used in the preparation of gloveskins, leather for ladies' shoes and skins with the fur left on. Shamoying derives its name from the preparation of the skin of the Alpine chamois, and consists of impregnating the skins with oil by means of stocks and working it into the leather, but most of the chamois of to-day is split sheepskin.

Leatherstocking Tales, The, are a series of adventures with Indians, by Cooper, in which Hawkeye or Leatherstocking is the central figure. They have become widely popular, especially among youthful readers. Cooper himself said that, if any of his romances were to outlive his own lifetime, it would be this series. The first of these books, *The Pioneers*, appeared in 1823. The others are *The Last of the Mohicans*, an admirable book in which the interest is maintained from first to last with the most extraordinary power, *The Pathfinder*, *The Deerslayer* and *The Prairie*. In *The Last of the Mohicans* the white scout, the central figure, is beautifully idealized. He is strong, acute and daring; he is simple and noble; he is cool, versatile, utterly at home with nature in all her moods. The Indian character is idealized, in a way which has been criticised but never forgotten, in the person of Chingachgook and, above all, in Uncas his son. *The Pathfinder* and *The Deerslayer* possibly are less exciting than *The Last of the Mohicans*, the favorite: but as works of art they are admitted to be the best that Cooper has done. "Beautiful" and "grand" are epithets applied by Balzac to *The Pathfinder*.

Leavenworth (*lĕv'en-wûrth*), Kansas, county-seat of Leavenworth County, is situated on the west bank of the Missouri River, 24 miles above Kansas City. It has a splendid town site, 34 miles of paved streets, all residence portions being noted for their beautiful shade trees. It has an area of about ten square miles and a population of twenty-four thousand people. The surrounding country is one of the best agricultural sections of Kansas, and the city is built directly over extensive coal beds, which have been mined on a large scale for twenty-five years, and add a large payroll to the city's industrial wealth. Among the manufacturing interests are three large furniture factories, wagon works, two flour mills, manufactories of stoves, mill machinery, gloves, macaroni, boxes, washing-machines, harness, soap, shirts, a planing-mill, packing-houses and bridge-works. There is situated at Leavenworth, Fort Leavenworth, with a normal garrison of from four to five thousand men, the National Soldiers' Home with 2,500 inmates, the Military Staff College, where the U. S. army officers receive postgraduate courses, the National Federal Penitentiary with 1,800 inmates, the National Military Detention Barracks with 1,200 inmates, the

State Penitentiary of Kansas with 1,200 inmates and St. Mary's Academy, one of the largest schools for girls in the West. The city is served by eight railroads.

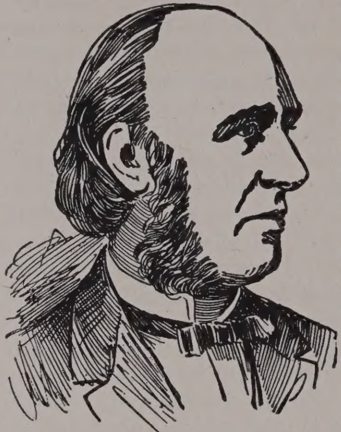
Lebanon (*lĕb'ȧ-nŭn*), a Turkish province and Syrian mountain-range running from north to south. The range is divided into Lebanon on the west and Anti-Lebanon on the east, with a valley between, traversed by Litany and El-Asi Rivers. The highest peak, El-Kudib, on the north of the Lebanon range, reaches an elevation of 10,018 feet. The western sides are covered by rich vegetation, many acres being devoted to vine-cultivation and the mulberry tree, as silk-manufacturing is one of the main industries of the inhabitants, who number about 200,000. Tobacco, wheat, barley and millet are cultivated, and the mountaineers keep large flocks of goats and sheep. Many remains, besides those at the head of the Kadisha valley, of the large cedar forests of Solomon's time still stand. In 1860 the government was taken from Turkey and given to a Christian governor under the protection of the European powers.

Lebanon, Pa., an old but growing city, the capital of Lebanon County in southeastern Pennsylvania, is 24 miles east of Harrisburg, on the Philadelphia and Reading and Cornwall and Lebanon railroads. It lies in a good agricultural country watered by Swatara Creek, and is rich in good brick-clay and stone quarries. The Cornwall iron mills adjoin the city, and it has iron-furnaces, rolling mills, machine shops, stove, boiler, nut, chain and bolt works, furniture, organ and cigar factories, agricultural implement works, steel plants and a silk mill. It has admirable public and parochial schools, a business college and a school of telegraphy. It has several churches, four libraries and six banks. Population 30,000

Le Brun (*le-brŭn*), **Charles,** a French historical painter, was born at Paris, Feb. 22, 1619, and was taken to Rome by Nicholas Poussin, where he studied for four years. Returning to Paris, he was employed by Fouquet, Cardinal Mazarin, Anne of Austria and Louis XIV, and was made the first director of the famous Gobelin tapestry-works at their foundation in 1660. While in full charge of the decoration of Versailles and called the founder of the French school of painters, a rival in royal favor arose and Le Brun retired, sickened, and died on Feb. 12, 1600.

Le Brun, Marie, a French painter, was born at Paris, April 16, 1755, and in 1776 married J. B. P. Le Brun, the grandnephew of Charles Le Brun. Her great beauty and charming painting made her very popular, and her first painting of Marie Antoinette (1779) made her the friend of the queen. In 1783, after much opposition on account of her sex, she was admitted a member of the Royal Academy of Painting. She left Paris at the Revolution, and after a triumphant tour of Europe, arrived in London in 1802, where she painted the portraits of the Prince of Wales, Lord Byron and others. She returned to Paris in 1805, and remained there until her death, March 30, 1842. Many of her best works, which, besides portraits, comprise landscapes and historical subjects, are in the Louvre in Paris.

Leck'y, William Edward Hartpole, historian and philosopher, was born near Dublin, March 26, 1838, and graduated from Trinity in 1850. He anonymously published *Leaders of Public Opinion in Ireland*, brilliant essays on Flood, Swift, Grattan, and O'Connell. His later works are *History of Rationalism in Europe*, *History of European Morals from Augustus to Charlemagne* and his philosophical study and historical portraiture of *England in the Eighteenth Century*. He sat in the House of Commons for Dublin University, but declared strongly against Irish Home rule. His later works include *Democracy and Liberty* and reflective philosophy entitled *The Map of Life*. He died on Oct. 22, 1903.


WILLIAM E. H. LECKY

Leclaire (*le-clêr'*), **Edme-Jean,** father of the modern system of profit-sharing, was born at Aisy-sur-Armançon, 100 miles southeast of Paris, May 14, 1801. At Paris he apprenticed himself to a house-painter, and in his 26th year began business on his own account. Having a large number of workmen under him, and believing that it was his duty not only to pay them reasonable wages but to build up their manliness and self-respect and to do away with all causes of antagonism between himself and his workmen, he determined to adopt Fregier's advice and allow them to participate in the profits of his business. The system of profit-sharing which he devised worked most successfully. There were no strikes among his workmen; they not only worked more faithfully and efficiently, but were better satisfied than employes under a strict wage system. To what extent Leclaire's principle of profit-sharing might be made a means of solving all questions now in issue between capital and labor is a question well-worthy the consideration of all political economists and social reformers. Leclaire died on July 13, 1872.

Le Conte (*le kônt'*) **Joseph** (1823-1901), **an eminent American physicist, born in**

Liberty County, Georgia. He graduated at Franklin College, Georgia, in 1841 and at the New York College of Physicians and Surgeons in 1845. For a few years he practiced as a physician in Macon, Georgia, but in 1850 entered Harvard to study under Agassiz, and in 1851 accompanied Agassiz on an exploring expedition to Florida. After graduating at Lawrence Scientific School, Cambridge, he in turn was professor of natural sciences in Oglethorpe University, of natural history in Franklin College, of chemistry and geology in the University of South Carolina and, from 1869 to his death, of natural history and geology in the University of California. Professor Le Conte did much to popularize the study of geology in America, and contributed much valuable information to scientific literature. His most important publications include *Religion and Science; Elements of Geology; Compend of Geology;* and *Evolution and Its Relation to Religious Thought.*

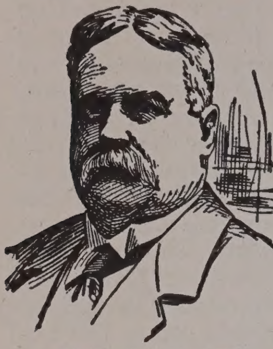
Leconte de Lisle (*le-kônt de lēl'*), **Charles Marie,** a French poet, was born on the island of Reunion, Oct. 25, 1818. He enjoyed the advantages of a thorough education, and after a few years of travel entered upon a literary life in Paris. As he grew older, his ardent nature found a congenial field in the study of Greek ideals and Oriental pantheism. Besides his own poems, he translated many Latin and Greek classics. Leconte greatly influenced the younger poets of his time, and his fame is increasing rather than diminishing. He showed great and deep sympathy with the dumb emotion in nature, and made his readers feel the vaster aspects of forest, sea and sky. He also showed a wonderful comprehension of all feelings and passions that agitate the soul, but appeared himself unmoved by them; and he surveyed human life with almost perfect clearness and calmness. He died on July 17, 1894.

Lec'ture-Bu'reaus, or offices from which lecturers may be engaged for popular audiences, upon the whole are a growth of the last decade, not only in the United States, but abroad. They represent an attempt at better organization of adult education. Lecture-bureaus have developed out of the employment of lecturers by workingmen's associations, trade-unions, temperance societies, university-extension boards and, especially, by associations formed for conducting popular lectures. In Sweden the oldest lecture-bureau dates from 1898. In 1902 this bureau employed 50 lecturers to give 900 lectures. In the United States lecture-bureaus have attained great importance; and several have been established in connection with public school systems, as in the case of New York City. In England private lecture-bureaus have scarcely been able to compete with the university-extension movement. In France lecture-bureaus have developed since the thorough governmental investigation (1895) of adult education. Lecture-bureaus are essentially mediating agencies whose function it is to bring together those who require instruction and inspiration and those who are qualified to give them. They are usually supported by a percentage of the fees or price of admission and by a charge for the registration of lecturers. Among the best known lecture-bureaus in the United States are the Pond (J. B.) Lyceum Bureau at Everett House, Fourth Avenue and Seventeenth Street, New York City; and the Phipps Lyceum Bureau, 1690 Broadway, New York City. Most of the American lecture-bureaus also are musical agencies

Ledyard (*led'yẽrd*), **John,** an American explorer, was born at Groton, Conn. in 1751. He entered Dartmouth College to prepare for missionary work among the Indians. But such was his passion for travel that, after floating down the Connecticut in a canoe, he shipped as a common sailor. In 1776-80 he accompanied Cook on the voyage around the world. In 1787 he obtained permission from the Russian government to accompany a Scotch physician in the Russian service to Siberia. After going with Dr. Brown to southern Siberia Ledyard proceeded alone to Tomsk and Irkutsk, visited Lake Baikal and sailed down the Lena to Yakutsk, a distance of 1,400 miles. He sought permission to proceed to Ohkotsk; but this was refused. Returning to Irkutsk he was suddenly arrested — for what cause has never been fully explained — hurried to Poland and there dismissed with the warning that he would be hanged if he set foot in Russia again. Ledyard made his way to London "disappointed, ragged and penniless" — to use his own words — "but with a whole heart," and was cordially befriended by Sir Joseph Banks. In 1788 he took command of a British exploring expedition into Africa, but died at Cairo, Jan. 17, 1789. He was one of the greatest of exploring travelers. See Sparks' *Memoir*

Lee, Ann. See SHAKERS.

Lee, Charles, an American Revolutionary general, was born in 1731 at Dernhall, Cheshire, England. He inherited a taste for military life. He took part in Braddock's campaign. He espoused the cause of the colonies in 1773. His military reputation gained him an appointment as major-general. His career disappointed confidence. His base ingratitude was never known until 1857, when a document was found in which, while a British prisoner (1777), he had submitted to the British general a plan for the overthrow of the American army. He rejoined the American army at Valley Forge (1778). From this time his course was marked by greater inefficiency and insubordination than before. In 1779 his commission was revoked in consequence of an insulting note to the presiding officer of Congress. He died on Oct. 2, 1782. See his *Life* by Jared Sparks in his Library of American Biography and that by G. H. Moore.

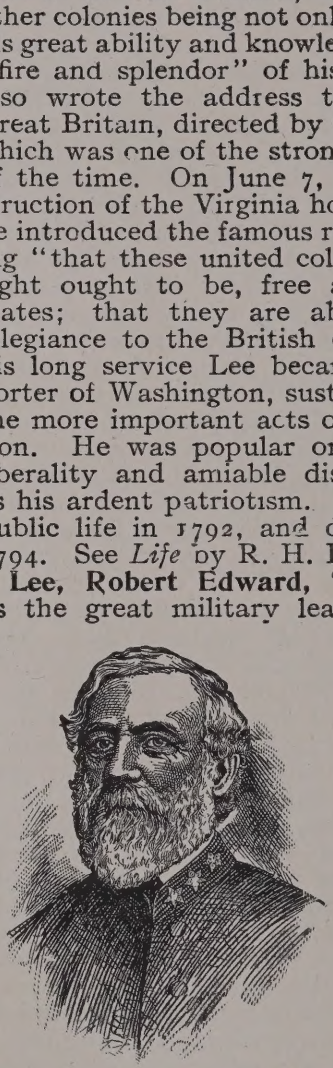


FITZHUGH LEE

Lee, Fitzhugh, an American soldier, was born in Fairfax County, Va., Nov. 19, 1835. He graduated at West Point in 1856. At the Civil War he entered the Confederate service, advancing to the rank of major-general. In 1885 he was elected governor of Virginia, serving until 1890. He was appointed consul-general to Havana by President Cleveland, and was retained at that post by President McKinley. He cared for the interests of the United States with signal ability during the investigation of the destruction of the *Maine* and throughout the trying times preceding the Spanish-American War. In that war he served as major-general of volunteers, and after peace was declared he was made governor of the province of Havana. He was later appointed brigadier-general in the regular army, retiring in 1901 He died in 1905.

Lee, Henry, a Revolutionary soldier, was born in Virginia Jan. 29, 1756. He graduated at Princeton College, and in 1776 was appointed a captain of cavalry, and in the following year joined the main army. His vigor and ability attracted the attention of Washington, and his command was soon distinguished for the rapidity of movement and soldierly daring which afterward made Lee's legion so famous and gave him the name of Light-Horse Harry. In 1786 Lee was sent to Congress by the Virginia assembly, and in 1792 he was elected governor of Virginia. As a member of Congress, at the death of Washington in 1799, he was appointed to prepare the eulogy upon the life and character of his dead chieftain. His resolutions contained the often quoted words: "first in war, first in peace and first in the hearts of his countrymen." Lee was in Baltimore in 1814, when the office of *The Federal Republican* was sacked by a mob. He took an active part against them, and with his friends was placed in jail for safe-keeping, but the mob broke into the building and killed or seriously injured all its inmates. Lee never recovered from his injuries and soon made a voyage to the West Indies in a vain search of health. He died on March 25, 1818.

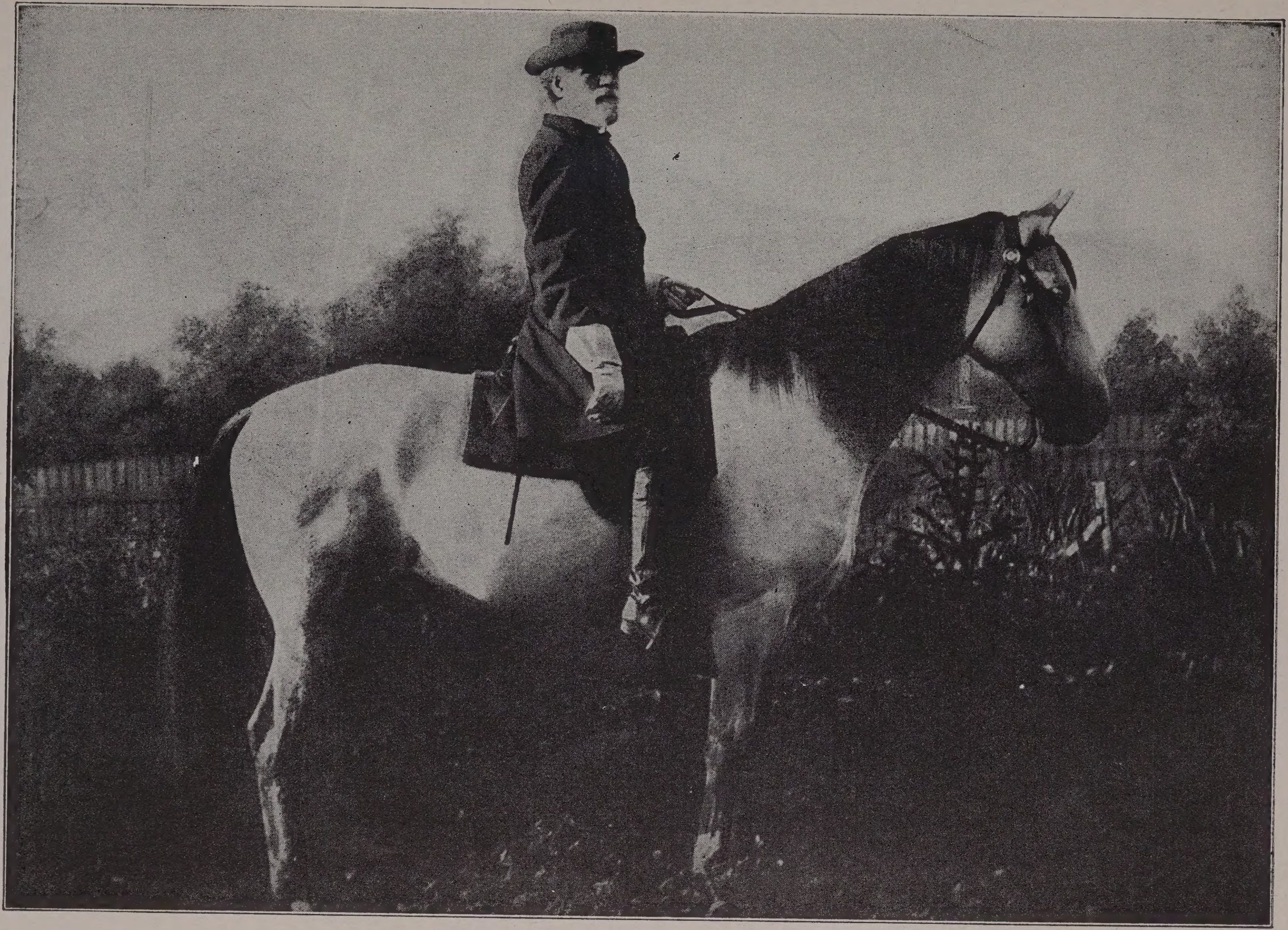
Lee, Richard Henry, a Revolutionary statesman and orator, was born in Virginia, Jan. 20, 1732. Soon after he was of age he was elected a delegate to the house of burgesses, where his first speech was in opposition to slavery, which he proposed to abolish by placing a heavy tax on all future importation of slaves. In 1767 he spoke against the acts which levied duties upon tea and other articles, and in the following year he suggested private correspondence between the friends of liberty in the different colonies. He is also said to have originated the idea of a congress of the colonies, which was carried into effect in 1774, when the first Continental Congress assembled in Philadelphia. Lee was one of the delegates from Virginia, and took active part in its deliberations, the delegates from other colonies being not only impressed with his great ability and knowledge, but with the "fire and splendor" of his eloquence. He also wrote the address to the people of Great Britain, directed by Congress in 1775, which was one of the strongest state papers of the time. On June 7, 1776, by the instruction of the Virginia house of burgesses, he introduced the famous resolutions declaring "that these united colonies are, and of right ought to be, free and independent states; that they are absolved from all allegiance to the British crown." During his long service Lee became a warm supporter of Washington, sustaining him in all the more important acts of his administration. He was popular on account of his liberality and amiable disposition as well as his ardent patriotism. He retired from public life in 1792, and died on June 19, 1794. See *Life* by R. H. Lee.



ROBERT EDWARD LEE

Lee, Robert Edward, "Marse Robert," as the great military leader of the Confederacy was affectionately called by the people of the south, died five years after the close of the Civil War. He knew the day would come when Blue and Grey would clasp hands above all those graves. Could he have lived until the centenary of his own birth, Jan. 19, 1907, he would have heard his eulogy pronounced by a Massachusetts Adams. He would have seen all parties and a national press united to do honor not only to his genius as one of the greatest soldiers America has produced, but also to the nobility of his character as a man.

Lee was born at Stratford, Westmoreland County, Virginia. His father was Light-



GENERAL R. E. LEE AND HIS WAR-HORSE TRAVELER

Horse Harry Lee of Revolutionary fame, and he was a descendant of two signers of the Declaration of Independence. Patriotism was a tradition of the family. So it was natural that he should be educated for the army. He graduated from West Point in 1829, entering the engineering branch of service. At 25 he married Mary Custis, great-granddaughter of Martha Washington and heiress of the beautiful estate of Arlington on the Potomac opposite Washington City. Fortune seemed to have marked him for its own. To birth, wealth, a cultivated mind, courtly manners, a fine physique and handsome face were added personal happiness and eminence in his profession. As chief engineer of the army in the Mexican War he won distinction; as superintendent of West Point in the fifties he introduced the best methods known in Europe. At the beginning of the Civil War he had only the rank of a colonel, but General Winfield Scott, head of the national forces, was too old to take the field, and he looked upon Lee as his most probable successor.

In 1852, in entering his own son at West Point, Lee said to him: "Duty is the sublimest word in the language; you cannot do more than your duty; you should never wish to do less." Now the question of duty confronted Lee himself. From the very beginning of our government the question of state-sovereignty versus the Union was a matter of debate. The south had generally advocated the principle of state-sovereignty. Lee was a southerner. He felt that his fealty belonged first to Virginia. In the same crisis Admiral Farragut decided for the Federal government. In remembering Lee's decision, it must also be remembered that his interests lay with the government, where immediate promotion awaited him, with protection for his home and family within the fortifications of the capital. There is reason to believe, now, that he knew that the Union must triumph, so that he consciously led a "lost cause" from the beginning. Beautiful Arlington, his wife's birthplace, his own home for 30 years, and his children's ancestral inheritance, was lost immediately. It lay on the natural line of defense of the capital, and became the first camping ground of the northern army. His fortune was lost when he resigned his commission and offered his services to the south. In the spring of 1862 he was placed in command of the armies operating in defense of Richmond. The masterly strategy which Lee displayed in the "Seven Days' battles" around Richmond showed him to be a commander of the highest order of ability. The same may be said of his movements in opposition to General Pope a few weeks later. Lee's success against McClellan and Pope emboldened him to attempt an invasion of Maryland in the fall of 1862. This campaign was terminated by the battle of Antietam, fought on the 16th and 17th of September. Not being pursued by McClellan after this battle, Lee recrossed the Potomac unmolested and then moved up the Shenandoah valley into the valley of the Rappahannock, taking position near Culpeper Court House McClellan at length followed, but on the 7th of November was superseded by General Ambrose E. Burnside. Soon after assuming command of the army, Burnside moved up the Rappahannock, intending to cross the river at Fredericksburg and proceed from that point to Richmond; but, when he reached Fredericksburg, he found Lee in position ready to dispute his passage. After some delay Burnside succeeded in crossing the river and attacked Lee, but was defeated with considerable loss. He succeeded, however, in recrossing the river, and a few days later was relieved of his command, and General Joseph Hooker was appointed in his place. After considerable time spent in preparation Hooker moved against Lee; but was defeated and driven back at the battle of Chancellorsville, May 2–4. Lee soon gathered together all his available forces and moved northward, his campaign ending with the battle of Gettysburg, which took place on the first three days of July, 1863. On the first two days of this battle the advantage seemed to rest with Lee's army, but on the third day he staked the issue in a grand charge, which was completely repulsed, and he was compelled to order a retreat. He succeeded in recrossing the Potomac, and was again safe in Virginia.

No operations of importance were undertaken by either army during the winter of 1863–64, but early in May, 1864, Lieutenant-General U. S. Grant was called to Washington, and took the field against Lee's army in person. Grant attempted to turn Lee's right flank by a march through the densely wooded region known as the Wilderness. Here occurred two days' bloody but indecisive fighting, after which Grant again sought to turn Lee's flank by marching to Spottsylvania Court House. At this place, on the 12th of May, there was another bloody and indecisive engagement between the opposing forces. The two commanders continued to confront and manœuvre against each other for some weeks without coming to a general engagement and without any result, save that Lee was gradually forced back toward Richmond, until he occupied very nearly the same ground that McClellan's army had occupied two years before. After making an unsuccessful attack upon Lee's position at Cold Harbor on June 3, Grant moved down the Chickahominy to the James and, after crossing the latter river, entered upon the siege of Petersburg, which continued till the spring of

1865. Grant's army then entered upon more active operations, and Lee was compelled to abandon both Petersburg and Richmond. He was still hotly pursued by Grant, and a few days later at Appomattox Court House his entire force surrendered, and the war came to an end. Lee might have prolonged the struggle indefinitely by breaking up his army into guerrilla bands and scattering them among the mountains, but this he refused to do. There are few instances of the nobility with which he accepted defeat, and set himself to helping to make his country once more a union of loyal states.

Although impoverished by the war and face to face with old age, he refused wealth and places of honor in service abroad, to accept the presidency of Washington and Lee University at Lexington, Virginia. Its doors had been closed four years. This was General Lee's part in the work of reconstruction. It was the last call to duty. In the last five years of his life 900 young southerners came under his care, to learn the duty of cooling their hot heads and sweetening their bitter hearts. The day of final reconciliation must have seemed very far away, indeed, when, on Oct. 12, 1870, "Marse Robert" fell asleep, and was buried in the college chapel. See General Long's *Memoirs of Robert E. Lee.*

Lee, Sidney, an eminent English author, critic and man of letters, was born in London in 1859 and educated at the City of London School and at Balliol College, Oxford. With Sir Leslie Stephen he shared the editorship of the English *Dictionary of National Biography*, completing that great work alone in 1891–1901. He is acknowledged the first authority on matters Shaksperian, and has written a classic life of the poet. His other published work includes *Great Englishmen of the 16th Century*, the *Poems of Shakespeare* and *Shakespeare and the Modern Stage*, with *Stratford-on-Avon.* In 1886 he edited the *Autobiography of Lord Herbert of Cherbury.* In 1903 he visited the United States, lecturing at several of the universities.

Leech, a segmented worm usually with a flattened body having a rounded sucker at each end. Most forms live in the water and are commonly called blood-suckers. They attach themselves to cattle and swimmers, and also are parasites on fishes, crustacea etc. There are land-leeches, too, in the damp forests of Asia, which are fearful pests. The blood-sucking leeches are provided with jaws in the middle of the front sucker. They consist of flattened plates, the outer edges of which are rounded and divided into numerous sharp points like teeth of a saw. Three of them radiate from the center, and the wound they inflict is three-parted. Leeches are used in medicine for letting blood. The stomach extends through the body and is sacculated; it can become greatly distended by blood. The sense-organs are of especial interest to zoologists. They are located on the surface in rows of small, rounded papillæ. These show a graded series in which touch-spots are gradually modified into eyes, as we pass from the hind to the front end of the body. In many species there are ten eyes.

Leech, John, an English artist, whose drawings and sketches in *Punch* won worldwide fame, was born at London on Aug. 29, 1817. He adopted art as his profession at an early age, and in the fourth number of *Punch*, Aug. 7, 1841, we find his first contribution to the journal with which his name is most closely associated and with which he was connected until his death. The cartoons which he designed for *Punch*, illustrating the politics, fashions and follies of the day, especially those dealing with the political life of Brougham, Palmerston and Russell, revealed genius of high order and attracted the notice of all classes. Equally delightful were the woodcuts which dealt in gently humorous fashion with every-day life. He died at Kensington, Oct. 29, 1864.

Leeds, the first town in Yorkshire and the fifth in England in population, is a municipal borough, and since 1885 returns five members to the house of commons. It is the seat of important manufactures, especially of clothing. It is estimated that merchandize to the value of $60,000,000 passes through its warehouses annually. Next to the woolen trade are the iron manufactories, which employ about 30,000 persons. There are nearly 120 churches in Leeds. The chief church-building is St. Peter's in Kirkgate. The population of Leeds is 445,568.

Leeward (*lē'wẽrd*) **Islands,** name given by English and French geographers to the Lesser Antilles (see West India Islands), extending from 15° to 19° north latitude. Reckoning from the south, their order is nearly as follows: Dominica (British), Marie Galante (French), Guadeloupe (French), Montserrat (British), Antigua (British), Nevis (British), St. Christopher's (British), Barbados (British), St. Eustache (Dutch), St. Bartholomew (French), Saba (Dutch), St. Croix (Danish), St. Martin (French and Dutch), Anguilla (British), Curaçoa (Dutch), Virgin Islands (Danish and British). The total area is about 5,000 square miles; that of those belonging to England is 700 square miles. The area of Antigua, the most important of the group, is about 108 square miles; chief town, St. John (population 9,300). The exports are chiefly sugar, rum, cocoa, fruit and spices.

Lefebvre (*le-fāv'r'*), **Francois Joseph,** marshal of France and duke of Dantsic, was born at Ruffach, in Alsace, Oct. 25, 1755, and died at Paris, Sept. 14, 1820. He played a prominent part under Napoleon in all his wars, 1799–1814; was ennobled by the Bourbons; stood by Napoleon in 1815; and yet did not lose by his master's final fall.

Legal, Right Reverend Emile I., bishop of St. Albert, Alberta, Canada, was born in Nantes, France, 1849, educated there and ordained in 1874. Professor of mathematics for five years at St. Stanislaus College, Nantes, in 1879 he joined the Oblate missionaries. Sent in 1881 to the Northwest Territories, for nine years he served as a missionary amongst the Peigan Indians and eight years among the Blood Indians. Appointed co-adjutor in 1897 to Bishop Grand, he succeeded as bishop in 1902, promotes missions, has established a seminary and is building a large cathedral.

Le Gallienne, Richard, an English journalist, writer of prose and verse and editor, was born in Liverpool in 1866. After studying and serving for seven years with a firm of accountants he abandoned this profession for literature. For a time he was secretary to Wilson Barrett, and again wrote at different times for the *Star*, *Daily Chronicle*, *Speaker* and *New York Journal*. He is a keen critic, and in 1899 made a heavy attack upon Kiplingism in *Rudyard Kipling*. He has gained some reputation in the United States as a lecturer, and at present resides in New York. Among his works may be mentioned *Retrospective Reviews*, *Prose Fancies*, *George Meredith*, *The Book-Bills of Narcissus* and *Robert Louis Stevenson and other Poems*.

Legend (*lĕj'ĕnd*), from the Latin word *legere*, to read, was a term originally given to portions of Scripture and certain other religious writings, especially the lives of saints and martyrs, that were to be read in the services of the early Christian church. The founding of monasticism caused a vast mass of this literature to be brought forth, much of which, manifestly, was the work of the imagination. It ever is the tendency of the mind to enshrine saints and heroes in fable and give free scope to the feelings and the imagination in picturing their lives and characters. Consequently, notwithstanding the strange intermixture of truth and falsehood in these legendary tales, they gradually established themselves both in the eastern and the western church, and in the course of time gained a place in the literature of Christian nations. Although the origin of the word legend is ecclesiastical, it has also come to be applied to any fabulous narrative handed down by tradition.

Legendre (*le-zhän'dr'*), **Adrien Marie,** a distinguished mathematician, was born at Toulouse, France, in 1752. Legendre first made known the proposition of spherical success, now considered an essential theorem of trigonometry; just as in 1806 he enunciated the first proposal to use the method of least squares in his *New Methods for the Determination of the Orbits of the Comets*. In 1827 appeared his *Treatise on Ellipses*—a subject with which his name must always remain associated. He wrote several other mathematical works, some of the highest importance. His best known book is his *Elements of Geometry*, translated into many languages—and by Thomas Carlyle into English. His *Theory of Numbers* is a classic still, and shows much original power. Legendre died at Paris, Jan. 10, 1833.

Leg'horn (It. *Livorno*), largest seaport in Tuscany, Italy, is situated on the Mediterranean coast, 13 miles by rail from Pisa and 62 from Florence. The houses for the most part are of modern style, lofty and roomy, the streets broad and clean, and there are fine squares, adorned with statues of the grand-duke of Tuscany. The northwestern portion of the city being intersected by numerous canals, it is sometimes called New Venice. The sulphur springs and sea-bathing attract a large concourse of travelers and visitors every season. The trade is large, the number of vessels entering and clearing the port in 1905 being about 8,500 of a combined total tonnage of 4,600,000 tons. Leghorn is defended both landward and seaward by forts and fortifications, constructed mostly in 1835-37. Population 108,000. Livorno also is a department in the province of Tuscany, whose area is 133 square miles and population 137,138. The exports, besides wines and fruits, embrace marble, hemp, hides, coral, soap, boracic acid, olive oil and the well-known Leghorn hat.

Le'gion, in the Roman military organization, was very similar to what in modern times is called an army-corps. In the time of the republic a legion was composed of 4,500 men as follows: 1,200 were *hastati* or inexperienced troops; 1,200 *principes* or well-trained soldiers: 1,200 *velites* or skirmishers; 600 *pilani* or veterans, forming a reserve; and 300 *equites* or knights, who acted as cavalry and belonged to families of rank. During this early period the legions were formed only for the season, the more complete organizations being effected during the civil wars and in the time of the Cæsars.

Legion of Hon'or, an order of merit instituted by Napoleon in 1802 as a reward for military and civil services, all previously existing military and religious orders having been abolished by the Revolution. It was founded, at least ostensibly, for the protection of republican principles and the maintenance of the laws of equality, citizens of all grades of society being equally eligible; and all persons admitted were required to do all in their power for the assertion of the principles of freedom and equality. Candidates in time of peace must have served in some military or civil capacity for 25 years; exploits on the field or severe wounds are a sufficient claim in time of war. The order gives free education to 400 of the daughters, sisters and nieces of its members.

Leg′ume, a pod consisting of a single carpel which splits down both sides, as in the bean, pea etc. See FRUIT.

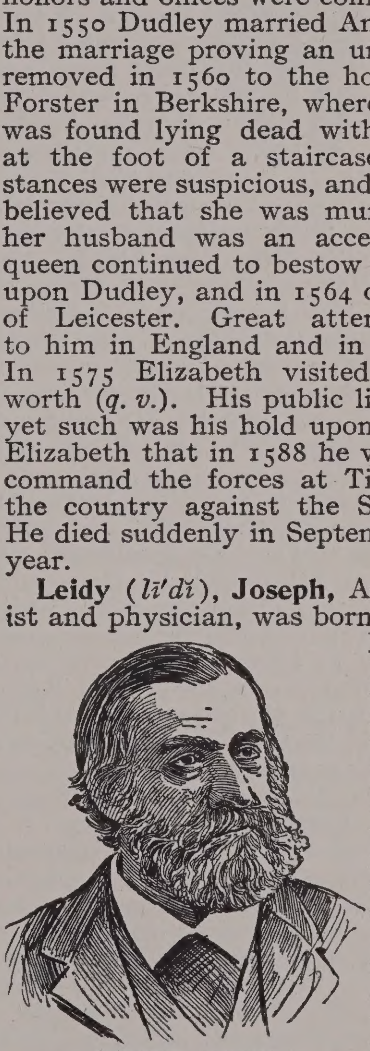
Le′high, a river rising in Luzerne County, Pa., and flowing through the eastern part of the state into the Delaware, with which it unites at Easton. Some of its scenery is very picturesque; but its valley is especially noted for mines of anthracite, for which the river affords an outlet, having been rendered navigable by extensive improvements for a distance of nearly 100 miles from its mouth.

Lehigh University. See SOUTH BETHLEHEM.

Leibniz (*līp′nĭts*), **Gottfried Wilhelm,** German philosopher and scholar, was born at Leipsic on July 6, 1646. Even in infancy he showed wonderful capacity for acquiring knowledge. He seems to have largely been his own teacher, pursuing many studies in addition to those of the regular course. He taught himself to read Livy when only eight; and his father's library was thrown open with permission to read to his heart's content. At this his joy knew no bounds. Before he was 12 he had made himself familiar with the Latin classics, had begun the study of Greek, and wrote verses with such facility that his friends feared his love of poetry would keep him from the more serious pursuits of life. He next took to logic and philosophy, and soon made himself master of ancient and modern authors, besides developing theories and ideas of his own. In 1661 Leibniz entered the University at Leipsic and applied himself chiefly to mathematics and law; but the degree of doctor of law being refused on account of his youth he in 1666 graduated at Altdorf, the university town of Nuremberg. His thesis attracted so much attention that he was offered a professorship. This, however, he declined, having "very different things in view." In the following year he was introduced to the elector of Mainz by whom he was appointed to the office of councilor, and thus obtained leisure to pursue his studies in politics and philosophy. From 1676 Leibniz was custodian of the public library of Hannover until his death on Nov. 14, 1716. In addition to law, science and philosophy, Leibniz gave much attention to theological questions, and sought earnestly to unite the Protestant and the Roman Catholic church. Failing in this, he afterwards sought to unite the Lutheran and the Reformed church of Prussia, but with a like want of success. See Guhrauer's *Life*.

Leicester (*lĕs′tẽr*), a city in England, is situated on Soar River, 22 miles south of Nottingham. Tradition states that it was founded by King Lear, and occupies the site of Roman Ratæ. Many Roman relics have been found, and the Jewry Wall is known to have been made of Roman brick. The old town hall, the new city buildings, free library, art school and five old churches are among the noticeable buildings. Leicester's rapid grown is due to its manufactures, of which the chief are hosiery, boots, shoes, webbing and lace. The city received its charter from King John. Popution 248,374.

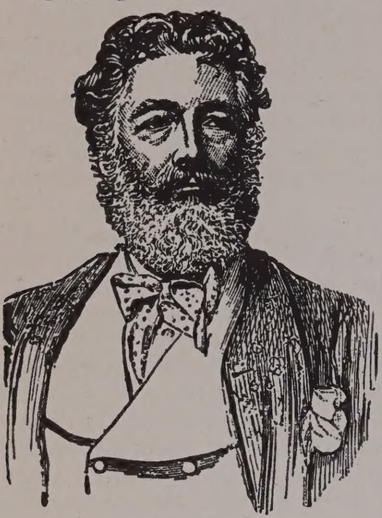
Leicester, Robert Dudley, Earl of, was born in 1532 of a very ambitious family. On the accession of Elizabeth, he became one of her favorites, and high honors and offices were conferred upon him. In 1550 Dudley married Amy Robsart and, the marriage proving an unhappy one, she removed in 1560 to the house of Anthony Forster in Berkshire, where soon after she was found lying dead with a broken neck at the foot of a staircase. The circumstances were suspicious, and it was generally believed that she was murdered and that her husband was an accessory. But the queen continued to bestow gifts and honors upon Dudley, and in 1564 created him Earl of Leicester. Great attention was paid to him in England and in other countries. In 1575 Elizabeth visited him at Kenilworth (*q. v.*). His public life was a failure; yet such was his hold upon the affection of Elizabeth that in 1588 he was appointed to command the forces at Tilbury to defend the country against the Spanish Armada. He died suddenly in September of the same year.



JOSEPH LEIDY

Leidy (*lī′dĭ*), **Joseph,** American naturalist and physician, was born at Philadelphia, Pa., Sept. 9, 1823. He graduated in the medical department of the University of Pennsylvania in 1844, and in 1853 was made professor of anatomy in that institution. In 1871 he was made professor of natural history at Swarthmore College, remaining there until 1884, when he was appointed director of the department of biology established that year in the University of Pennsylvania. This position he held until his death at Philadelphia, April 30, 1891. The results of his researches, which were of great importance and value, were recorded in his numerous works. These include *Extinct Species of the American Ox; Ancient Fauna of Nebraska; Cretaceous Reptiles of the United States; Extinct Mammalian Fauna of Dakota and Nebraska;* and *The Fossil Horse.*

Leighton (*lā'tŭn*), **Lord Frederick,** an English painter, was born at Scarborough in 1830. His early years were spent in the study of art under the best masters in Rome, Florence, Frankfort, Paris and Brussels. His famous picture, *Cimabue's Madonna carried through Florence,* was his first appearance in the Royal Academy in 1855, and was at once purchased by Queen Victoria. Other paintings are *Ariadne, Hercules Wrestling with Death, Andromache, The Harvest Moon* and *Helen of Troy.* He also was known as a sculptor. In 1878 he became president of the Royal Academy, and was made a baronet in 1885. In his lifetime he received almost every honor possible to an artist. He died on Jan. 25, 1896. See *Life and Works* by Mrs. Andrew Long.



LORD LEIGHTON

Leighton, Robert, a Scottish prelate of rare gifts and saintly character, was born at Edinburgh in 1611. He graduated at the University of Edinburgh in 1631, and in 1641 was ordained a Presbyterian minister. When Charles II gained the throne, he persuaded Leighton to accept a Scotch bishopric. He labored to build up the Episcopal church, but his work "seemed to him a fighting against God." The king's object was to force Episcopacy upon Scotland, while Leighton's design was to reconcile Episcopacy and Presbyterianism. In 1670 he was appointed archbishop of Glasgow, but finding all efforts to secure an accommodation with the Presbyterians vain, he resigned in 1674 and retired to England. Death came in 1684. Leighton left various works, the most valuable of which is a commentary on *First Peter.* Coleridge's *Aids to Reflection* is largely based on cullings from Leighton's writings.

Leipsic (*lĭp'sĭk*), the third commercial city of Germany, is in a large and fertile plain in Saxony, 80 miles by rail from Dresden and 100 from Berlin. The inner or ancient town, with its narrow streets and quaint-looking houses, is separated from the modern portion by a broad promenade, laid out on the site of the ancient walls. Its population is over 500,000. As a center of trade Leipsic is inferior only to Hamburg and Berlin; and it ranks next to London and Paris in its publishing and bookselling. Nearly five hundred houses engage in the book-trade, and there are about one hundred printing establishments, while German typefounding has its principal center here. The famous Leipsic fairs are held at Easter, Michaelmas and New Year's, and continue from three to five weeks. It is estimated that the usual number of visitors at these fairs is over 50,000 and that the commercial transactions amount to $50,000,000 annually. The university, founded in 1408 by a secession of students from Prague, has 231 professors and over 4,000 students. It has a library containing nearly 400,000 volumes, spacious medical and physical laboratories and other "institutes," 48 in number. Among other educational institutions may be mentioned two gymnasiums, a school of commerce and a conservatory of music. Leipsic suffered greatly during the Thirty Years' War, being five times besieged and taken; and the great victory of Gustavus Adolphus over Tilly, the imperial general, Sept. 17, 1631, was gained at Breitenfield, near the city. The great battle of Leipsic —justly called the Battle of Nations—was fought on Oct. 16–19, 1813, between Napoleon and the allied forces of Russia, Prussia, Austria and Sweden. Napoleon had about 180,000 men, the allies nearly 300,000. Napoleon's signal defeat contributed largely to his downfall and to the deliverance of Europe from his domination.

Leis'ler, Jacob, a revolutionist, born at Frankfort-on-Main, Germany, emigrated to America in 1660, and took up his residence in Albany. He became prominent about 1675. He was appointed one of the commissioners of the court of admiralty in 1683. He was a man of benevolent spirit and firm principles, although these principles were not always in accordance with the public mind, and he was sometimes forced into jail rather than abandon them. In June of 1689 the people of New York, roused and excited by the rumors of the political revolution in England, assembled in arms to overthrow the existing government. Leisler then was at the head of the commercial world in New York, and was looked upon as a man of force and ability. Having declared himself for the Prince of Orange, he was chosen as leader of the revolt. He was at the head of the mob which held the fort "for the present Protestant power that reigns in England." In 1689, Sloughter, an English stranger, had been commissioned in London as governor of the province of New York. He was detained for some reason in England, and did not arrive until 1691. Then, being a man of no morals and needy and avaricious, he fell into the hands of Leisler's enemies, with the result that the latter's property was confiscated by the new governor. Leisler himself was thrown into prison and shortly afterwards executed.

Leith (*lēth*), an important seaport in Scotland and a municipal and parliamentary borough, stands on the south shore of the Firth of Forth, two miles north of Edinburgh. The harbor works have cost more than $5,000,000. The foreign, colonial and coaling trade, already very great, is constantly increasing, and there is regular steamboat communication with London and several other ports. The nine months' siege by the Protestants in 1559–60 and the surprise of its citadel by the Jacobites in 1715 are the chief events in its history. Population 85,721.

Le'land, Charles Godfrey, an American author, was born at Philadelphia, Aug. 15, 1824, graduated at Princeton College in 1846, and afterwards studied in various European cities. He was admitted to the Philadelphia bar in 1851, but soon gave up law for journalism and literature. Between 1873 and 1890 he published four valuable books on the gypsies; but he is most celebrated for his poems, written in the Pennsylvania "Dutch" dialect, under the name of *Hans Breitmann's Ballads.* He died on March 20, 1903.

Le'ly, Sir Peter, an English painter of the 17th century, was born in Westphalia in 1617, and died at London in 1680. At 20 he had won considerable reputation by his painting of landscapes. Coming to England in 1641, he determined to give his attention to portrait painting; and after the death of Vandyke he was acknowledged to be the first painter in England. He was introduced to Charles I a year or two after his arrival, and painted the portrait of that prince. During the Commonwealth he painted Cromwell's portrait, receiving the command to make a true likeness, with all the warts and wrinkles on the face of his subject. Charles II made him court-painter and conferred on him the honor of knighthood. His best-known pieces are the *Beauties of the Court of Charles II.*

Le'man, Lake. See GENEVA, LAKE OF.

Le Mans (*le-moṅ'*), a city of France on the Sarth, 132 miles southwest of Paris. It has interesting churches and a seminary in the buildings of the old convent. Its trade, which is large, is in poultry and clover seed, and the manufactures are candles, woolens, lace and soap. It was known to the Romans as Cenomarum, and was the birthplace of Henry II of England. In 1871, 100,000 Frenchmen were defeated at Le Mans by Prince Frederick Charles of Prussia. Population 63,272.

Lemberg, city in Poland, former capital of Austrian Silesia, situated on a small tributary of the Bug, 212 miles from Cracow. It is defended by a citadel, around which the modern town has been built. Lemberg has nearly 30 churches and several monasteries, and as early as the 17th century was called the town of the monks. There is a university, founded in 1784, which has 3,300 students, a faculty and a library of nearly 100,000 volumes. Lemberg was founded in 1259, and was an important city of Poland until that kingdom was partitioned in 1772, when the city fell to Austria. Population 206,574.

Lem'nos, a Turkish island in the Ægean Sea, is about 30 miles from Mt. Athos and from the Dardanelles. It is nearly split in two by a large bay on the northern coast and another one on the southern coast. The area is about 180 square miles, and the population about 30,000, mostly Greeks. The chief town is Kastro (population 3,000). The principal products are corn, wine and tobacco. The island passed into the hands of the Turks from the Venetians in 1657, and is used as a place of banishment for Turkish political offenders.

Le Moine, (*lē moin'*), **Sir James MacPherson,** a Canadian naturalist and writer, was born at Quebec, Feb. 25, 1825. He was educated at Le Petit Seminary, studied law, and was admitted to practice in 1850. He gave his attention, however, largely to a study of Canadian history and to natural history. The results are given in *L'Ornithologie de Canada, Legendary Lore of the St. Lawrence, Maple Leaves, Picturesque Quebec* and other works. He was knighted in 1897.

Lem'on, a species of *Citrus,* the genus to which belong the orange, citron, lime, grapefruit etc. The species whose varieties furnish the lemon, citron and lime is *C. medica,* and is native to India. The lemon variety is *C. medica limon,* a small spreading tree or shrub, cultivated extensively in all tropical and subtropical regions. The tree grows from 10 to 20 feet high; the outer branches are long, the foliage not abundant, the flowers not so abundant as those of the orange. In California lemon-culture has become an important industry, California growers winning in competition with imported fruit. The best results are obtained in southern California and near the coast. Lemons are cut while green and ripened slowly in curing-houses. The fruit is highly valued, and oil or extract is obtained from the rind.

Le'mur, the common name for a considerable group of monkey-like animals, curious and interesting creatures. They show so many variations that it is difficult to characterize the lemurs. Although found in Africa and Asia, the headquarters of the family is Madagascar. Thirty-four of the known 65 species live there. They inhabit trees and are active only at night, and therefore are hardly ever to be seen in the daytime. The name means ghost, and was given because of their coming forth at night and because of their eerie appearance. They vary in size from that of a fox down to a mouse. The typical lemurs have fox-like faces; the eyes are large and round, the body is covered with soft, wooly fur, the tail is bushy. There is, however, much variation about them; in some the tail is absent, in other species it is of considerable length. In color there is a wide variation. They live in troops in the forest, feed on dates, other fruits and on insects, and some attack birds. They obtain water from juicy fruits. The aye-aye is an unusual form of lemur. Though the creatures really are harmless, because of their strange cries, nocturnal habits and curious appearance much superstition has grown up about them.

Le′na, a river of eastern Siberia, rises amid the mountains on the northwestern shore of Lake Baikal, flows northeast to Yakutsk, where it is more than six miles wide, then north to the Arctic Ocean, into which it empties by several mouths, forming a delta 250 miles wide. The entire length of the river is 3,000 miles, and the area of its basin 750,000 square miles. The Lena is the principal artery of the trade of eastern Siberia, navigation being open annually from Yakutsk northward from May until October.

Lenine, Nikolai, who succeeded Kerensky as premier was, previous to the revolution, a Socialist member of the Duma. For plots against the government he was compelled to flee to Switzerland. In April, 1917, with the aid of Germany, he reached Petrograd and led an uprising of the Bolsheviki (*q. v.*) which overthrew Kerensky and chose Lenine premier and Leon Trotsky foreign minister. Later, under his guidance, the recognition of property rights was partially established to secure foreign investment, and he came to be conconsidered the safest counsellor among the Bolsheviki. Towards the close of his rule he was averse to many of Trotsky's desires. He died Jan. 21, 1924.

Len′ox Library, The, an institution founded in New York City in 1870 by James Lenox. Mr. Lenox had inherited a large fortune, and during many years devoted his time to collecting rare books and manuscripts. These collections he deeded to trustees for the public benefit, and erected a building to contain them which cost nearly one half million dollars.

Lens, a combination of two refracting surfaces bounded on each side by the same medium. Generally the lens is a transparent piece of glass bounded on each side by air. Since the only surfaces which can be ground in lathes with accuracy are spherical surfaces, practically all lenses are made with spherical surfaces. That is, the shape of a lens may be considered as the shape of a figure bounded by two spheres. The following figures show four of the principal types of lenses:

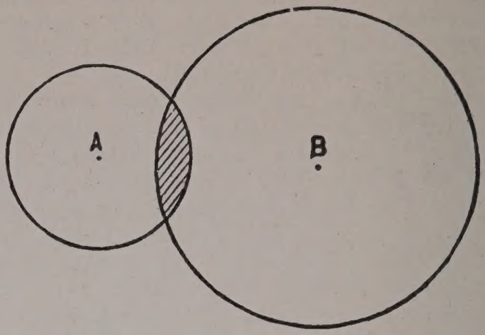


FIG. 1.—A CONVERGING LENS

The line joining the centers A and B of the two spheres is called the *principal axis* of the lens. Note that this axis is perpendicular to the surface of the lens at the point where it passes through the surface. See Focus.

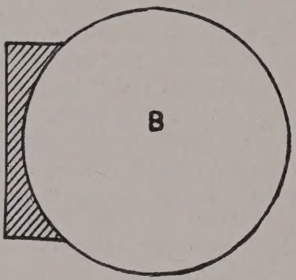


Fig. 2. A diverging lens with one plane surface

Lenses are divided into two principal classes, viz., *diverging* and *converging*.

A diverging lens is one such that if a plane wave-front is incident upon it, the emergent wave-front will be *convex* on its advancing side; while a converging lens is one such that if a plane wave-front is incident upon it, the emergent wave-front will be *concave* on its advancing side. Whatever the incident wave-surface, a diverging lens makes the emergent surface more convex, and a converging lens makes the emergent surface less convex.

Lenses are generally ground in such a way that this emergent wave-front is very nearly spherical. The center, F, of this spherical surface is called the *principal focus* of the lens. (See Fig. 5.) The distance from the principal focus to the center of the lens is roughly called the *focal length*. The power of a lens is defined as the reciprocal of the focal length. The manner in which a lens produces an image will be clear from Figs. 6 and 7. Considering any

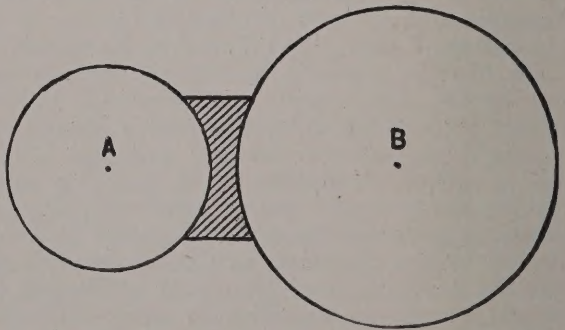


FIG. 3.—A DIVERGING LENS

luminous point, O, we may determine its image I by graphical means, if we remember the two following fundamental facts: 1. A ray falling on a lens in a direction parallel to its axis passes on emergence through its principal focus. 2. An incident ray which passes through the principal focus of a lens will emerge in a direction parallel to the axis of the lens. Thus the rays leaving O in Fig. 6 and passing through F and F′, intersect at I and thus determine I as the image of O. A similar process applied to every other point on the arrow O will give the corresponding points on the image-arrow I.

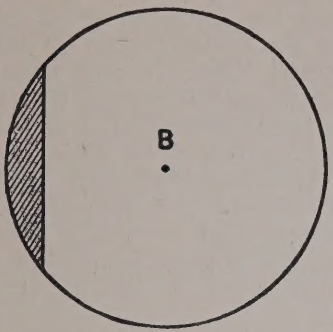


Fig. 4. A converging lens with one plane surface

In general, the outer portions of a lens behave rather differently from the portions near the center. Hence a single lens, to give good definition, must be used with small aperture; that is, the pencil of rays which can be successfully used with a single lens is small. But if a lens is limited by a diaphragm, so that it admits only a small pencil of rays, the image will not be bright. In order to overcome this difficulty the so-called *achromatic lenses* have been invented. The discussion of these lenses is a subject too advanced for this place; but an achromatic lens may be simply defined as one which will do for its whole aperture what the single lens does only for its center. The variety of lenses used in practice is enormous, almost each different purpose requiring a different lens. The best treatment of lenses extant is to be found in Winkelmann's *Handbook of Physics*. It is written by Czapski, and has not been translated into English.

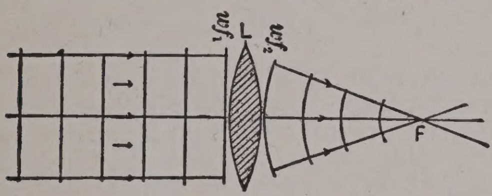


Fig. 5.—Focal length of a converging lens

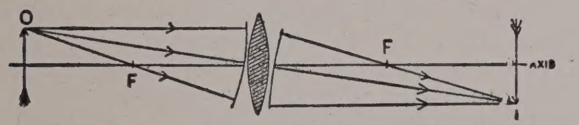


Fig. 6.—Image of a body produced by a converging lens

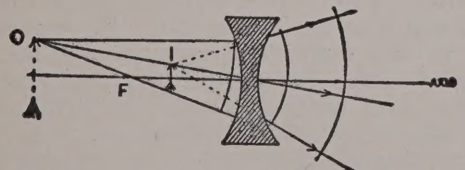
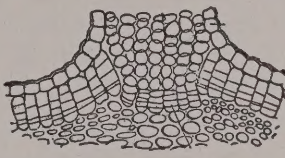


Fig. 7.—Image of a body produced by a diverging lens

Lent, the 40 days' fast before Easter Sunday, instituted in the early history of the Christian church as a preparation for the anniversary of Christ's resurrection and also as a memorial of his 40 days' fast in the wilderness. The rigor of the ancient observance, which excluded all flesh and even the so-called white meats, has been much relaxed, but the principle of permitting but one meal, with a slight refection or collation, has been retained by all churches that recognize the obligation of keeping Lent. In the Church of England and the Protestant Episcopal Church of the U. S. Lent is observed with special services and with proper collects and prayer; but the fast is left to the conscience and discretion of each individual.

Len′ticel. In stems in which bark is produced, the cork-cells at the point corresponding to the stomata of the epidermis become rounded and loosened from one another. Under this strain the epidermis ruptures at the stoma, and a powdery mass of cells is exposed through a slit-like opening, the whole structure being called a lenticel. These lenticels are commonly seen on young bark, and serve to place the living cells within in connection with the outside air.



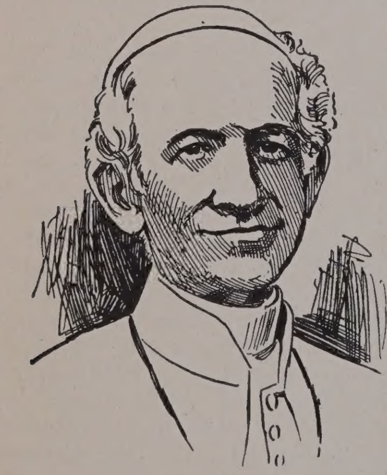
SECTION OF A LENTICEL

Leo, the name of 13 popes of the Roman Catholic church, of whom Leo I, Leo III, Leo X and Leo XIII are most worthy of mention.

Leo I, surnamed The Great, was born of a distinguished family at Rome, about the close of the 4th century; and on the death of Sixtus III in 440 Leo was chosen his successor. It is in his pontificate that the regular series of pontifical letters and decretals may be said to have commenced. They exhibit remarkable activity and zeal, and are often quoted as evidence of the extent of pontifical jurisdiction at that time. In a council held at Rome in 449 Leo set aside the proceedings of the "Robber Synod" of Ephesus, which had decided in favor of Eutyches, and summoned a council at Chalcedon, in which his celebrated letter was accepted "as the voice of Peter." Leo died in 461.

Leo III was born at Rome in 750, and succeeded Hadrian I in 795. His pontificate was far from being a peaceful one. In 800 Charlemagne came to Rome, where he was crowned and saluted as emperor by Leo, and the temporal sovereignty of the pope over the Roman city and state was formally established. Leo became involved in a dispute with Emperor Louis I about his sovereign jurisdiction at Rome, which was not settled at the time of Leo's death in 816.

Leo X, Gio′van′ni dei Me′dici, the second son of Lorenzo the Magnificent, was born at Florence in December, 1475. He was created cardinal at 13. In the expulsion of the Medici from Florence after the death of Lorenzo the young cardinal was included, and he used the occasion as an opportunity for foreign travel, visiting Germany, France and the Netherlands and everywhere seeking the society and acquaintance of the learned. On the death of Pope Julius II in 1513 Cardinal dei Medici was chosen as his successor, under the name of Leo X His appointment of the two great scholars Bembo and Sadoleto as his secretaries was a pledge of the favor toward learning so characteristic of his pontificate; but he did not neglect the material and political interests of the church and Roman see. Leo's desire to raise money for rebuilding St. Peter's caused him to offer indulgences to all who would contribute for that purpose, and was the occasion of the Reformation in Germany. Leo at first regarded the affair as a mere squabble between Luther and Tetzel, and, although he condemned Luther's doctrines and course, his measures on the whole were not marked with great severity. Whatever may be thought of Leo's political movements, his private conduct was above reproach and above all imputation of immorality or irregularity. His death on December, 1521, has been attributed to poison; but there seems no sufficient reason for this suspicion.



LEO XIII

Leo XIII, was born March 2, 1810, and after filling high positions in the church was created a cardinal by Pius IX in 1853. In 1878 Cardinal Pecci was chosen his successor as the representative of the moderates. He assumed the name of Leo XIII, and at once adopted an opposite policy to that of his predecessor. He restored the hierarchy in Scotland, and so composed the conflict between Pius and Bismarck that, when a dispute arose between Germany and Spain as to the ownership of the Caroline Islands, he was requested by Bismarck to act as arbitrator. The pope also interested himself in the suppression of African slavery, and manifested enlightened and liberal views in other directions; but on all questions relating to the church and himself as its head he stood firmly by the ancient doctrines and his own rights as the vicegerent of Christ. He regarded himself as the despoiled sovereign of Rome and a prisoner at the Vatican; he refused the income voted to him by the Italian parliament; and in his encyclicals he affirmed that the only solution of all socialistic questions is to be found in the influence and authority of the papacy. In his foreign policy he generally exhibited wisdom and foresight. In 1883 he opened the archives of the Vatican for historical investigation, and he made himself personally known as a poet, his productions being chiefly written in Latin. He died, July 20, 1903.

Leochares (*lē-ok′ă-rēz*), a distinguished Grecian sculptor of the Attic school who flourished in the 4th century before Christ. He was one of the privileged artists who were permitted to make portraits of Alexander the Great. His *Abduction of Ganymede by the Bird of Jove*, of which there is a copy in the Vatican, was his masterpiece and has been justly and universally admired.

Leominster (*lĕm′ĭn-stĕr*), a town of Worcester County, Mass., on Nashua River, 40 miles from Boston. It manufactures piano-cases, pianofortes, combs, buttons, hairpins, jewelry, toys, yarn, cement and brick; and, besides, has paper mills and large cabinet works. It has an admirable school-system, a public library of more than 18,000 volumes, several churches and a park. Leominster is supplied with gas and electric light, has municipal ownership of its waterworks system, and is served by two railroads. It was settled in 1725, until 1740 was a part of Lancaster, and was then incorporated. Population 22,000

Leon. See SPAIN.

Leon, the fifth city of Mexico, lies on the right bank of the Rio Torbio, 100 miles from the city of Mexico. The chief industry is tanning, but cotton and woolen goods are manufactured to some extent, and there is quite an extensive trade in wheat and other grains. Population 63,263.

Leonardo da Vinci (*lä o-nar′dō dä vēnchē*), painter, sculptor, architect, engineer and scientist, was born in 1452 at Vinci a village between Pisa and Florence. He was educated in his father's house, where he early showed signs of the bright and versatile genius that distinguished him through life. He was especially remarkable for aptitude for arithmetic and skill in music and drawing. About 1470 he was placed in the studio of Andrea del Verrocchio, where he had Perugino and Lorenzo di Credi as fellow-pupils. So rapid was his progress that he soon began to take part in the production of his master's pictures, and work of his **can be traced in Verrocchio's** ***Baptism of***

Our Lord. His greatest picture was *The Last Supper,* which, even in its present dilapidated condition, remains a monument of his genius and one of the masterpieces of the world. This picture was completed in 1498, but its execution, it is supposed, extended over several previous years. In addition to the great fame won by Leonardo as a painter and sculptor, he highly distinguished himself as a musician, scientist and engineer. He was a man of unusual strength, and very handsome. He finished only a small number of pictures, but he was dissatisfied with anything less than the ideal. Curiosity, inventiveness, a love for the strange and marvelous, distinguished him. Seeing *The Last Supper* on the reflectory wall of the *Santa Maria delle Grazie* in Milan, one is astonished at its message, its perfection of detail. *Mona Lisa,* that great portrait of his which has been a wonder of the world for years, marks his creation of a symbolic type of ideal feminine beauty. The smile of *Mona Lisa* has haunted and amazed the perplexed artists who have studied it, and made the painting, now in the Louvre, almost priceless. It was stolen in 1911, found in Florence in 1913, and restored. Other famous works include the unfinished *Adoration of the Kings; Medusa's Head;* two versions of *Our Lady of the Rocks; St. Anne,* and *St. John the Baptist.* He died in the chateau de Cloux, Amboise, France, on May 2, 1519.

Leonid (*lē'ō-nĭd*), one of the shooting stars or meteors which constitute the star shower occuring at mid-November at intervals of about thirty-three years. The name is derived from the fact that these shooting stars seem to move in lines which radiate from the constellation Leo. The shower is caused by the fact that this swarm of stars crosses the earth's orbit periodically. The Leonids are unusually beautiful, being very swift, of a greenish tint, and carrying persistent trains. They meet the earth at a velocity of forty-four miles a second. These lovely stars were first given authentic notice in the display of 902. There were brilliant recurrences in 1202, 1366, 1799, and on November 12, 1833. At this time it was noted that the phenomenon occurred periodically, and it was predicted for November 13, 1866, at which time it recurred. The Leonids are retarded by about three days in a century, and sometimes planetary disturbances affect the shower. There was little display on November 15, 1899, and scientists discovered that the main body of Leonids had swerved aside and may never again encounter the earth. They follow after Tempel's Comet of 1866, and according to the theory of Leverrier, were introduced into the solar system through the influences of Uranus in 126 A. D. at which time it is thought the comet and meteor shower formed one compact mass. At present the stragglers of the star shower are scattered over the entire orbit, and the denser swarm of Leonids covers a section of the orbit that measures hundreds of millions of miles.

Leonidas I (*lē-ŏn'ĭ-dȧs*), king of Sparta about 480 B. C. When Xerxes approached the narrow pass of Thermopylæ with his immense army, Leonidas opposed him with 300 Spartans and about 5,000 auxiliaries. Finding it impossible to bar the progress of the foe, Leonidas and his 300, having sent their auxiliaries home, threw themselves upon the invaders and perished. Their sublime heroism has ever since been celebrated in prose and song, and was an inspiration to all Hellenes in driving back the invading hosts.

Leopard (*lĕp'ẽrd*), a fierce, spotted animal of the cat tribe inhabiting Africa, Asia and the large islands of the Malay Archipelago. It is smaller than the jaguar, being about four feet long, with a tail three feet in length. There is considerable variation among leopards as to size and color. They usually are pale fawn color with dark spots, except on the under surface. The more robust forms of southern Asia are called panthers, but it is impossible to separate the species absolutely. The leopard lives in the forests, and is a tree climber. It is agile and a remarkable jumper. It attacks the antelope, young cattle, pigs and occasionally man. It may be tamed. The cheetah or hunting leopard of India is a slim species of a related genus, and is trained to aid in hunting.

Leopardi (*lā-ō-pär'dē*), Giacomo, a Count and one of the most famous poets of modern Italy, was born at Recanati, near Ancona, on June 29, 1798. His parents were of noble rank but poor. At the age of sixteen he had devoured the Latin and Greek classics, and could write French, Spanish, English and Hebrew. At an early age he wrote a commentary on Plotinus, of which Sainte-Beuve said that "one who had studied Plotinus all his life could find something useful in this work of a boy." Leopardi visited Rome in 1822, returned to Recanati in 1823, and for the next ten years devoted himself to literature. His physical constitution had always been feeble, and as he grew older his ill-health and mental despondency constantly increased. In 1833 he accompanied his friend Ranieri to Naples, and remained there until his death, which occurred on June 14, 1837. Leopardi certainly is entitled to high rank as poet, scholar and thinker, and it has even been said that Dante is the only Italian equal to him in genius; but his extreme pessimism and the limited range of his sympathy were bars to the highest creative effort. The pessimism was the burden of both his prose and poetry; and the first and last word of his philosophy is the "void and nothingness of all human life and effort." The most noted of Leopardi's works are the *Cante* and *Canzoni* in poetry, and in prose the *Operette Morali.* His works were edited by Ranieri in 1845.

Leopold I, king of Belgium, was born at Coburg on December 16, 1790, the son of Francis, duke of Saxe-Coburg, and uncle of Queen Victoria. He was a general in the Russian army, serving at the battles of Lützen

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King Leopold III and Queen Astrid of Belgium

Bautzen and Leipzig. He was naturalized by the Act of Parliament in 1816, and was married to Princess Charlotte, heiress to the throne. She died in 1817. In 1830 Leopold was offered the Greek crown, which he accepted, only to abdicate in the same year. In 1831 he was chosen king of the Belgians. As a monarch Leopold displayed marked ability, conducting himself with prudence, moderation and constant regard to the principles of the Belgian Constitution and the interests of his people. He died on December 10, 1865.

Leopold II, Louis Philippe Marie Victor, son and successor of Leopold I of Belgium, was born at Brussels on April 9, 1835. In 1853 he was married to the Archduchess Marie Henriette Anne of Austria. He ascended the throne on December 10, 1865. In 1882 he founded the Congo International Association, and in 1885 he became sovereign of the Congo Independent State. In 1908, owing to criticism of the cruel exploitation of the natives, he relinquished his sovereignty to Belgium. He died on December 17, 1909.

Leopold II, Louis Philippe Marie Victor, Brussels on November 3, 1901, the son of Albert I of Belgium and Elizabeth of Bavaria. As a youth Prince Leopold was carefully educated and trained for the duties as ruler in succession to his father. He studied French and Flemish literature, history, law and economics as well as philosophy at the University of Ghent. He learned the intricacies of foreign policy under Henry Jaspar, who has held several portfolios in the Belgian cabinet and who, at one time, was Prime Minister of Belgium.

Following in the footsteps of his illustrious father, Leopold entered a military academy at an early age. After attending the academy for two years the young prince was made a sublieutenant of Grenadiers. During the World War he served with a Belgian regiment, one of the youngest soldiers in the service. Prince Leopold was but thirteen years and five months old when he enlisted on April 3, 1915. At his father's insistence he was enlisted as a private and treated like an ordinary soldier. At the close of the war Leopold had been commissioned a sergeant. He was ever insistent that he be permitted to carry out his work like the rest of his comrades, and would tolerate neither pity from his superior officers because of his youth, nor favoritism because of his princely position in life.

In 1919 Prince Leopold accompanied his parents, King Albert and Queen Elizabeth, on their famous tour of the United States, England, France, Spain and Brazil. Like his father, Leopold is intensely interested in politics and economics. He is also a devotee of travel and in recent years has been most active in studying the colonial administration of Belgium possessions.

On November 4, 1926, Prince Leopold married Princess Astrid of Sweden, daughter of the Duke of Vaestergietland and a niece of King Gustav. The civil ceremony was performed in the throne room of the royal palace at Stockholm. The religious ceremony took place in Belgium in accordance with the rites of the Catholic Church of which King Leopold is a communicant. Princess Astrid adhered to her Protestant faith. At the time of the marriage, Prince Leopold bore the title of Duke of Brabant. The first child born to the Duke and Duchess of Brabant was Princess Josephine Charlotte, on October 11, 1927. A young son, Prince Baudoin, was born in 1930. On June 6, 1934, a son and heir to the throne, was born. A young prince was christened Albert Felix Humbert Theodore Christian Eugene Marie, after his late grandfather, Albert I.

On February 17, 1934, upon the sudden death of King Albert at Namur, Belgium, Prince Leopold automatically succeeded to the throne. He was crowned Leopold III, King of Belgium, on February 23, 1934. His reign thus far gives promise of being a reign of progress. Up to the present time his acts have conformed to the general policies of King Albert, whose life work had been devotion to the cause of increasing the prosperity of the masses of his subjects and his country.

Lepanto (*lā-pän'tō*), the ancient Naupactus, a town of Greece situated on the north coast of the Gulf of Lepanto or Corinth. On the gulf and near the town, on October 7, 1571, was fought one of the greatest naval battles of the world, between the forces of the Turkish sultan and those of Pope Pius V, Philip II of Spain and the Venetian Republic. The action lasted four hours, and resulted in the defeat of the Turks and the almost complete destruction of their fleet. The Turks had hitherto been thought invincible on the sea; but in this battle they received a blow from which they never fully recovered. The Christian forces were commanded by Don John of Austria. It is said that the Pope, on hearing of the victory, burst into tears and exclaimed, "There was a man sent from God, whose name was John." The town became Greek in 1829. The population is approximately 68,000.

Lepidoptera (*lĕp-ĭ-dŏp'tẽr-ȧ*). See Butterfly, Moth and Insects.

Lepidus, Marcus Æmilius, a Roman triumvir. When war broke out in 49 B. C., he sided with Cæsar against Pompey. He was at the head of the only armed force at Rome when Cæsar was assassinated, and used the opportunity to have himself made pontifex maximus. In 43 B. C. he united with Antony and Octavianus to form the triumvirate, obtaining Spain and Gallia Narbonensis for himself. After the battle of Philippi in 42 B. C. a redivision was made in which Lepidus received Africa, where he remained until 36 B. C., when he was called by Augustus to aid him against Sextus Pompey. He tried to seize Sicily, but was overcome by Augustus, who banished him to Circeii, where he died in 13 B. C.

Leprosy (*lĕp'rō-sĭ*), a name applied to several different skin-diseases characterized by roughness or scaliness. Of true leprosy there are several well-marked types. The first is characterized by the formation of nodules of tubercles in the skin, common about the eyebrows, where they destroy the hair and produce a frowning or leonine aspect. After a time the nodules break down, forming ulcers, which discharge for a time and may cause extensive destruction and deformity. The tubercles may form in the nostrils; in the throat, altering the voice; on the eyelids, extending into and destroying the eyeball. In the second type the chief features are insensibility and numbness of parts of the skin, accompanied by deep-seated pains causing sleeplessness and restlessness. In the third variety much mutilation occurs owing to the loss of bones, chiefly of the limbs, a portion of a limb being frequently lopped off painlessly at a joint. All these varieties begin with the appearance on the skin of blotches of a dull coppery or purplish tint, the affected part being thickened, puffy and coarse-looking. When the redness disappears, a stain is left or a white blotch. Leprosy is now believed to be caused by a minute organism — a bacillus — and to be contagious. Though the disease is not so widespread as it was at one time, it still prevails in Norway and Iceland, the coasts of the Black Sea and Mediterranean, in Madagascar, Mauritius, Madeira, the Greek Archipelago, East and West Indies, Palestine and the Pacific islands.

Lepsius (*lĕp′sē̇-o͞os*), **Karl Richard,** a distinguished Egyptologist, was born at Naumburg, Dec. 23, 1810, and studied at Leipsic, Göttingen, Berlin and Paris and between 1834 and 1842 published dissertations on the monuments of Egyptian art and their general architectural style. In 1842 he was placed at the head of an expedition sent to Egypt by the king of Prussia. When he returned three years later, he was appointed ordinary professor in Berlin. To the study of Egyptian archæology he joined the investigation of the languages, history and monuments of the regions farther up the Nile, and to him, more than to any other man, belongs the honor of raising Egyptology to the rank of a scientific study. He died at Berlin July 10, 1884. See Ebers' *Richard Lepsius.*

Le Sage (*le säzh′*), **Allan René,** a French author, was born at Sarzeau, Brittany, May 8, 1668. His father died in 1682, leaving him to the care of an uncle, who so wasted his inheritance that he had to begin life with no other capital but his genius and the education he had received at the Jesuit school in Vannes. He held an office in the collection of taxes in Brittany for a number of years, and in 1692 went to Paris to study law. He was admitted to the bar as an advocate, but soon abandoned the legal profession to devote his attention to literature. About 1695 he made the acquaintance of the Abbé de Lionne, who granted him the use of a large Spanish library, with a pension of 600 livres, to enable him to pursue the study of Spanish literature. Le Sage achieved considerable success as a dramatist, but his fame rests mainly upon his novel, *Gil Blas*, which has been translated into all the languages of Europe and is still read with interest and delight. The fine delineations of character, the nervous style and the blending of the various portraits into one comprehensive picture are among the qualities of this book that have given it long life and great popularity. In the words of Scott, speaking of its author: "His muse moved with an unpolluted step, even where the path was somewhat miry." He died at Boulogne, Nov. 17, 1747.

Lesbos (*lez′bos*) or **Mityle′ne,** a Greek island in the Ægean Sea, lies south of the Dardanelles, ten miles from the coast of Asia Minor, north of the Gulf of Smyrna. The island was early colonized by Æolian immigrants and between 700 and 500 B. C. was the home of such poets and philosophers as Alcæus, Sappho, Pittacus, Theophrastus and others. In the 6th century B. C., the island was subject to Persia for about 60 years. Then it belonged successively to Athens, Macedonia, Pontus, Rome and Byzantium. The Turks held it from 1402 to 1914 when Greece annexed it. Its products are grapes, figs, wine and olive oil. Area 676 square miles. Population 125,500. Kastro is the chief city of the island. Population 18,500.

Leslie, Charles Robert, a painter, born of American parents at London, Oct. 19, 1794. Returning to Philadelphia in 1800, after spending a few years at school, he was apprenticed to a bookseller. In 1811 he obtained the long-desired opportunity to study the art of painting, and became a student in the Royal Academy at London. The first picture that brought him into notice was *Sir Roger de Coverley going to Church.* His principal pictures are scenes from Shakespeare, Cervantes, Le Sage, Moliére, Addison, Swift, Sterne, Fielding and Smollett. In 1833 he accepted the professorship of drawing at West Point, but gave up the position in the following year and returned to England, where he remained until his death, in 1859. Leslie's strongest points as a painter were power of expression and delicate perception of character as well as of female beauty.

Lesseps (*lâ sĕps′*), **Ferdinand, Vicomte de,** a French diplomatist and engineer, was born at Versailles, Nov. 19, 1805. Educated for the diplomatic profession, he filled various appointments at Lisbon, Madrid and other European capitals with marked ability and efficiency. In 1854 he conceived the plan of cutting a canal through the Isthmus of Suez, and in January, 1856, obtained from the viceroy of Egypt a charter for the organization of a stock-company to prosecute the work. Eminent engineers, like Robert Stephenson, questioned the practicability of the scheme; but by energy and perseverance De Lesseps raised the necessary capital, and, ten years after beginning the work, had the satisfaction of seeing the waters of the Red Sea and those of the Mediterranean united. The canal was opened on Nov. 17, 1869. The successful engineer was knighted by Queen Victoria, and received honors and decorations from nearly all the other sovereigns of Europe. His successful completion of the Suez Canal led him to propose the construction of a canal across the Isthmus of Panama. But, although he made the most earnest efforts to carry out the great project, his hopes in reference to it were not realized. He died near Paris, Dec. 7, 1894. See SUEZ and PANAMA CANAL.

Lessing (*lĕs'sĭng*), **Gotthold Ephraim,** a German literary reformer, was born in Saxony, Jan. 22, 1729. At 17 he entered the University of Leipsic as a theological student. But he soon developed a passion for the study of dramatic art, which diverted his attention from theology. He left Leipsic, and after a few months at Wittenberg went to Berlin, where, in connection with his friend, Mylius, he for a year or more published a periodical devoted to the drama. In 1755 Lessing wrote the tragedy of *Miss Sara Sampson,* which contributed largely to free German literature from the prevailing imitation of French models and give it new and original character. In 1767 he became director of the new national theatre at Hamburg. where he finally overthrew the domination of the French drama and worked out thoughts and ideas long ripening in his mind. In 1763 he wrote the well-known comedy of *Minna von Barnhelm.* In 1779, on account of his arduous labors and his grief for the death of his wife and only child, his health began to decline. He died at Brunswick, Feb. 15, 1781. On account of the manly independence which characterizes Lessing's writings and the important influence he exercised, he is often called the Luther of the German drama and of German literature and art. See *Life* by Guhrauer.

Lethbridge, a coalmining center in Alberta, Canada, has a population of 14,000. There is an inexhaustible supply of excellent coal cropping out at many points along streams of Alberta. The Lethbridge district is regarded as one of the leading agricultural districts in Alberta. Ranching is still an important industry. The yield of wheat in 1907 averaged more than 23 bushels per acre.

Lethe (*lē'thē*), in Greek mythology, the stream of oblivion in the lower world from which the souls of men drank forgetfulness of their sorrows before passing into the Elysian Fields. According to Vergil such souls as were destined to return to earth in different bodies also drank of the waters of this stream, that they might forget the Elysium.

Let'ters, usually termed Polite Letters, form one of the most delightful branches of literature, although it must be conceded that the railway, the telegram and other conditions of our civilization are very unfavorable to correspondence in any proper sense of that term — "business letters" being almost the only ones for which our day is noted. Most biographies now written contain the letters of the character dealt with, and these generally give a clearer and better idea of his personality than the most elaborate description by the author, while they also furnish something of the peculiar interest and charm that belong to autobiography. Of all the famous letter-writers of the world, Cicero is the earliest and the greatest. More than 800 of his letters are extant, and all are natural, sincere and outspoken. The very frankness of his vanity and his desire to please give a peculiar pleasure to the reader. The only other important Latin letter-writers are Seneca and Pliny, neither of whom can be compared with Cicero. The four greatest English letter-writers are Gray, Cowper, Horace Walpole and Charles Lamb. Gray's letters are somewhat fastidious, but always sincere, and their perfect execution is a thing that comes of itself, unstudied and unsought. Walpole said of himself that he lived "a life of letter-writing," and he remains pre-eminent both in the amount and the wonderful felicity of his correspondence. Of German letter-writers it may be enough to mention Goethe, Schiller and Humboldt; of French, Voiture, Madame de Maintenon, Madame du Deffand, Sainte-Beuve, George Sand, Mérimée and the unapproachable Madame de Sévigné. The sovereign quality of the last named is her goodness of heart, combined with a wonderful insight into the thoughts and feelings of others and the power of giving life and interest to everything she touched. Among other famous letter-writers should be mentioned Erasmus of Holland and Lowell of America.

Leuthen (*loi'ten*), a village in Lower Silesia, clebrated for the victory won there by Frederick the Great during the Seven Years' War. The result of the battle fought on Dec. 5, 1757, was the reconquest of the greater portion of Silesia by Prussia.

Leutze (*loit'se*), **Emanuel,** an American historical painter of German birth, was born at Gmund in Württemberg in 1816. His parents emigrated to America during his infancy, settling in Philadelphia, where his early years were passed. His first successful picture was an Indian gazing at the setting sun, which procured so many orders for work that in a few years he obtained the means to study his art in Europe. He remained abroad for 14 years, settling in New York city in 1859. His works include three scenes from the life of Columbus, several from English history and a number depicting events in the Revolutionary War, of which perhaps the greatest is *Washington crossing the Delaware.* His *Columbus in Chains* procured the medal of the Brussels art exhibition. One of his latest works was the *Westward Ho* mural picture for the staircase of the capitol at Washington. He died at Washington, D. C., July 18, 1868.

Levant′, a name used to designate the eastern part of the Mediterranean Sea and the coast regions of Syria, Asia Minor and Egypt. In a wider sense it is applied to all the region eastward from Italy as far as the Nile and the Euphrates.

Levee (*lev′ā*), the French name for embankment, specially applied to the high embankments built on either side of the Mississippi for 500 miles to prevent its overflow in times of high water. Notwithstanding the care and labor expended in the construction of the Mississippi levees, they sometimes give way under the pressure of very high water, causing the overflow of large portions of land and great destruction of property.

Lev′en, Loch, a beautiful oval lake, 23 miles northwest from Edinburgh, Scotland. It is 353 feet above the sea, and is surrounded by the beautiful mountains of Bernarty, West Lomond and other hills. Its outlet is the Leven, flowing 16 miles eastward to the Firth of Forth. It has a depth of from 10 to 90 feet and an area of 3,406 acres, its size having been reduced about one fourth by drainage. The two largest of its seven islands, St. Serf's Inch and Castle Island, are sandy and treeless. The first was an early seat of the Culdees, and on Castle Island Queen Mary was imprisoned for ten months. The lake abounds in trout. See Burns-Beg's *History of Loch Leven Castle.*

Lev′er, the simplest of all machines. It has a variety of objects. Sometimes it is employed to increase the force which one is able to apply at some particular point, as in the case of a pair of nut-crackers; sometimes one uses it to multiply the motion of a point, as in the index on the dial of a steam-gauge· sometimes, as in the case of sugar-tongs pliers and tweezers, to reach otherwise inaccessible places. The essential feature of any lever is a more or less rigid bar capable of rotation about the edge of some body as axis. This edge is called the *fulcrum* of the lever, and is indicated by O in Figs. 1 and 2. The principle of the lever is as follows: Let F_1 (in fig. 1 or fig. 2) be the force exerted on the end of the lever whose length is x_1, and let F_2 be the force exerted upon the arm whose length is x_2. We may suppose these forces to be at right angles to the arm and that the lever is rotated through an angle θ: so that the distance through which the force F_1 acts is $x_1\ \theta$, and the distance through which the force F_2 acts is $x_2\ \theta$. Now, since hardly any energy is here wasted in friction, we may, according to the principle of the conservation of energy, say that the work done by these two forces is the same, and hence

$$F_1\, x_1 \theta = F_2\, x_2 \theta$$

or

$$F_2 / F_1 = x_1 / x_2,$$

which means that the force one can obtain by use of a lever is to the force which he applies to the lever inversely as the lengths of the arms. The ratio F_2 / F_1 is sometimes called the *mechanical advantage* of the lever

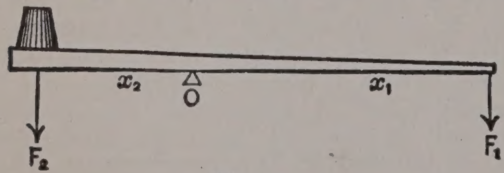


Fig. 1

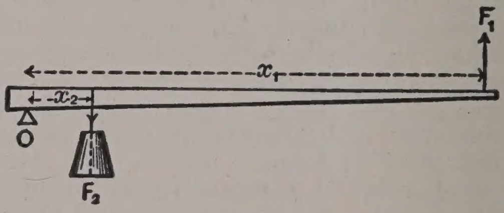


Fig. 2

Great care must always be observed in estimating the length of the arms. The fulcrum at O is the axis of rotation; and the distance from this axis to the point where the one force is applied is one arm, x_1; the distance from the axis to the point where the other force is applied is the other arm, x_2. These definitions are illustrated in each of Figs. 1 and 2. The theory of the lever was first correctly enunciated by Archimedes (287-212 B. C.) The pulley, the windlass, the chemical balance, the ordinary pin, the button etc. are merely special cases of the lever.

Le′ver, Charles James, a popular novelist, chiefly noted for the rollicking fun of his Irish stories, was born at Dublin, Aug. 31, 1806, and graduated at Trinity College in that city in 1827. His most popular work, *Charles O'Malley,* is a reflex of his own college life at Dublin, and many of the incidents in this novel are no doubt drawn from his own experience in the world. His other notable novels include *Harry Lorrequer, Con Cregan, Roland Cashel, Lord Kilgobbin* and *Tom Burke of Ours.* He died at Trieste, France, June 1, 1872.

Leverrier (*le-vă'ryā*), **Urbain Jean J.**, a great French astronomer, born in Normandy, March 11, 1811, died at Paris, Sept. 23, 1877. He began life as a student of chemistry under Gay-Lussac, but in 1837 accepted a chair of astronomy at the Polytechnic School in Paris, and for 40 years devoted himself almost exclusively to celestial mechanics. In 1846 he predicted, by a study of the motion of Uranus, that there was a disturbing body in the neighborhood: and this body which we now call Neptune, was discovered on Sept. 23, 1846, by Galle at Berlin, within one degree of the place where Leverrier said it would be found. This prediction is really no more remarkable than many others which have been made in astronomy; but it is one which has always caught popular applause. In 1854 Leverrier succeeded Arago as director of the Paris Observatory, a position which he held with the exception of three years until his death.

Le'vi and **Le'vites.** In Jewish history Levi was the third son of Jacob and Leah and ancestor of the Levites. The three divisions of Levi's family are said to have received no allotted territory, only 48 scattered cities. The story of the Levites is one of controversy, some maintaining that Levi was the ancestor of the order and others denying that it originally was a tribe at all. The Levites were set apart for the temple service. See Wellhausen's *History of Israel*.

Lewes (*lū'is*), **George Henry**, an English philosophical writer, was born at London in 1817. His first important work was his *Biographical History of Philosophy* (1845) subsequently much extended and altered — a work written from a positivist point of view and sufficiently proving his ability as a thinker and writer. From 1849 to 1854 he was literary editor of the *Leader*, during that time publishing his *Life of Robespierre* and a compend of *Comte's Philosophy of the Sciences*. His *Life of Goethe*, which won him a European reputation, was published in 1855. From 1854 he was largely engaged in physiological investigations, with special reference to philosophical problems. To this period belong his *Seaside Studies*, *Physiology of Common Life* and *Studies in Animal Life*, besides papers contributed to the British Association on the spinal cord and on the nervous system. In 1864 he published A *Study on Aristotle*, and in 1865 founded the *Fortnightly Review*, but was compelled by ill-health to retire a year later. The chief work of his life aiming at the systematic development of his philosophical views, is entitled *Problems of Life and Mind*. His relations with the novelist, "George Eliot," will be known to readers. He died in 1878.

Lewis or **Snake River,** the great southern branch of the Columbia River (which see).

Lewis, Francis, an American patriot, was born in Llandaff, Wales, in 1713. He came to America in 1735 and established mercantile houses in New York and Philadelphia. During the French and Indian Wars, he was captured at Oswego in 1752 and after a sojourn in France as a prisoner he was exchanged. He was one of the first to join the Sons of Liberty, and was prominent in the Continental Committees. He was elected to the Continental Congress, and signed the Declaration of Independence. In 1779 he was appointed commissioner of the Board of Admiralty. He died in 1803.

Lewis, Gilbert Newton, an American chemist, was born in 1875 at Weymouth, Massachusetts. In 1912 he became professor of physical chemistry and dean of the School of Chemistry at the University of California. In 1925 he was Silliman lecturer at Yale. Among his writing are: *Valence and Structure of Atoms and Molecules* (1923), and *The Anatomy of Science* (1926).

Lewis, Isaac Newton, an American army officer and inventor, was born at New Salem, Pennsylvania, in 1858. He was graduated from West Point in 1889, and rose to the rank of colonel, retiring with that rank in 1913. He invented the famous Lewis machine gun, which after its rejection by the United States was accepted for use by the British government. It proved of great worth during the World War. Among his other inventions are a time-interval clock and bell system of signals, a replotting and relocating system for coast-artillery batteries, an automatic sight, quick-reading verniers for use in coast defenses, electric car lighting and windmill electric lighting systems. He died in 1931.

Lewis, James Hamilton, an American lawyer and legislator, was born at Danville, Virginia, in 1866. He was educated at Houghton College and at the University of Virginia. He later studied law at Savannah, Georgia, and was admitted to the bar in 1884. Two years later he settled in Seattle, Washington. In 1896 he was elected Representative-at-large in Congress from the State of Washington. He served one term and became prominent as the author of the resolution for the recognition of Cuban independence. He served in the Spanish-American War. In 1903 he was a member of the Joint High Commission on Canadian and Alaskan Boundaries which met in London. He also served as United States Commissioner to regulate the customs laws between the Dominion of Canada and northwestern United States.

In 1903 he removed to Chicago. He was corporation council for the city in 1905-07. In 1908 he was the Democratic candidate for governor, but was defeated by Charles S. Deneen. He was elected to the United States Senate in 1912, defeated in 1918, and again elected in 1930. In 1914 he served as United

States Commissioner at London to execute treaty laws for safety at sea. His writings include: *Laws and Decisions Upon Elections; Constitutions, Statutes and their Construction* (with Prof. A. H. Putney); *The Two Great Republics*: *Rome and the United States;* and *Transformation of International Law.*

Lewis, Meriwether, an American explorer, was born near Charlottesville, Virginia, in 1774. In 1794 he served as a private in the forces enlisted to put down the Whisky Rebellion in western Pennsylvania. In the following year he entered the regular army. He served as President Jefferson's private secretary, 1801-03. He joined with Captain William Clark and commanded the famous Lewis and Clark Expedition to Oregon. Upon his return to the east, he was granted a large tract of land in Louisiana and also was appointed governor. He died in 1809.

See LEWIS AND CLARK EXPEDITION.

Lewis, Morgan, an American soldier and lawyer, was born in New York City in 1754. He served as a major in the Continental Army. After the Revolutionary War, he took up the practice of law. He married into the Livingston family, and became prominent in politics as an Anti-Federalist. He was offered the position of Secretary of War by President Madison in 1812, but declined to accept the post. He became quartermaster-general of the army, however, with the rank of brigadier-general, resigning in 1815. He died in 1844.

Lewis, Paul A., an American research pathologist, was born at Chicago, Illinois, in 1879. He served as an associate in pathology at the Rockefeller Institute (1908-10), director of the laboratory of the Phipps Institute of the University of Pennsylvania (1910-23), and professor of pathology at this university (1921-23). In 1916 he was summoned to New York as one of a commission to combat infantile paralysis. Upon the outbreak of yellow fever in Brazil in 1928, Dr. Lewis was sent to Bahia by the Rockefeller Institute to study the disease. He contracted the fever and died in 1929.

Lewis, Sinclair, noted American author, the first American to win the Nobel Prize for Literature (1930), was born at Sauk Center, Minnesota, February 7, 1885. His father was the physician in this village of 2,500 persons, and frequently young Lewis drove the horse on the Doctor's rounds, on occasion helping in emergency cases. The boyhood of the future novelist was typical of that of most boys in the small towns of the Middle West. He was a thin, nervous, red-haired boy, whose distinguishing characteristics were an intense interest in reading, his study of Greek under the tutelage of the Episcopalian minister, and his desire to study French. He had little interest in athletics and was nearer the bottom than the top of his class at school. Even in his youth, however, he showed a marked tendency toward being a non-conformist, and decided to go East to school instead of to the University of Minnesota.

In 1903 Lewis entered Yale University, and almost immediately became known as "Red," a name which is still used by his intimates, both because of the shade of his hair and his radical ideas. At Yale, he refused to follow the conventions and showed no interest in such things as fraternity life or the usual extra-curricular activities. In his senior year he was editor of the *Yale Literary Magazine.* He was graduated with an A. B. in 1907.

After leaving Yale, Lewis spent some time at Helicon Hall, in New Jersey, as a disciple of Upton Sinclair. Emma Goldman and other prominent persons were there at the time. Lewis was the janitor. The community cooks were a lawyer and an M. A. His first writing, which was published and paid for, consisted of verse and jokes for *Life* and *Puck.* He next became assistant editor of the since suspended *Transatlantic Tales,* where he remained until he decided to go to Panama to work on the canal. He was unsuccessful in obtaining work in Panama, however, and returned to the United States. He then went to Waterloo, Iowa, and thence to San Francisco, where he worked as a reporter on the *Bulletin.* His next work was as editor of the *Volta Review,* a magazine for the deaf. He gave up this job to join William Rose Benét, another graduate of Yale, at Carmel, California. The two young men lived together here for six months; both wrote a great deal, but the only thing Lewis was able to sell was one lone joke to *Judge.*

Lewis went East again in 1910, and undertook editorial work with Stokes. After two years he became assistant editor of *Adventure.* He was next editor of the Publisher's Newspaper Syndicate, and finally became editor and advertising manager of the George H. Doran Company. In 1916 he gave up this position to devote all his time to his own writing.

Two years previously, Lewis had married Miss Grace Livingston Hegger of New York City. They made their home in Long Island and while commuting to and from his New York office, Lewis wrote the greater part of *Our Mr. Wrenn* (1914) and *The Trail of the Hawk* (1915). Neither of these books brought him any great fame, but in the meantime Lewis had begun writing short stories also. After Lewis gave up his editorial position, he and his wife moved from place to place in the United States. A son, Wells, was born in 1917. His writings during this time include *The Job* (1917); *The Innocents* (1917). and *Free Air* (1919).

The entire American public became Lewis-conscious shortly after the appearance of *Main Street* (1920). He had conceived the book in 1905 while a student at Yale. It was a sensational success, but it was attacked bitterly as being an unfair picture of life in an American small-town. It was defended by others with equal vehemence as depicting the typical vices of a democratic people. Lewis now spent some time in England and Italy, during which he produced *Babbitt* (1922) which brought the author further antagonism and respect. The book's leading character, George F. Babbitt, is a typical American "realtor" with all the weaknesses and idiosyncrasies of the average human. Every reader must recognize some of his own characteristics in this composite personage, which Lewis chose to name "Babbit." "It is a book of fearfully destructive criticism, but it destroys nothing but fraud."

Upon their return to America, the Lewises settled at Hartford, Connecticut, and here the author planned *Arrowsmith* (1925). A great deal of research work was necessary and in New York, Lewis met Dr. Paul de Kruif who had just left the Rockefeller Institute for Medical Research. The two travelled through the Virgin Islands, the Barbados, Trinidad, Venezuela, and to London, discussing the scientific details of Dr. Arrowsmith's career. Lewis finished the book in a cottage on the edge of the Forest of Fontainebleau, France. In 1926, Lewis refused the Pulitzer prize of $1,000 for *Arrowsmith.* This was done as a protest against the restrictive terms of the award, the author saying, ". . . the Pulitzer Prize for Novels is peculiarly objectionable because the terms of it have been constantly and grievously misrepresented. Those terms are that the prize shall be given 'for the American novel published during the year which shall best present the wholesome atmosphere of American life and the highest standard of American manners and manhood.' . . ." It is of interest to note that this complaint led to modification of the terms of the award, so that to-day the prize goes to what is considered the best American novel of the year.

Lewis's next book was *Mantrap* (1926), and this was followed by *Elmer Gantry* (1927). This satire on religious charlatanry brought the author another storm of abuse. Just as any number of small towns had taken a perverse delight in claiming to be the original "Main Street," so various clergymen charged that Lewis had portrayed them as the Reverend Gantry.

Lewis was divorced from his first wife in 1925, and three years later he was married to Miss Dorothy Thomson, a newspaper correspondent and the author of *The New Russia* (1928). In 1930 a son, Michael, was born to them.

Lewis's other writings include: *The Man Who Knew Coolidge* (1928); *Dodsworth* (1929), and *Ann Vickers* (1933). He also wrote the play *Hobohemia* (1919), which was produced in New York City.

Lewis and Clark Expedition. The purchase of the Louisiana Teritory from France by the United States in 1803 was anticipated by President Jefferson. As soon as the business was concluded, he recommended to Congress the advisability of exploring our new possessions to determine their character, extent and value; and he named his own private secretary, Meriwether Lewis, a young Virginian, and Captain William Clark of the regular army as competent to lead such a hazardous enterprise. The expedition to the headwaters of the Missouri and thence across the mountains to the Pacific was authorized and immediately organized. A company of 30 were selected —nine hardy young backwoodsmen from Kentucky, 14 soldiers from the army, two Canadian *voyageurs*, an Indian interpreter, a veteran hunter from the plains and a negro servant — in all, 30 men. In the summer of 1803 they proceeded to St. Louis and wintered at the mouth of the Missouri. In the spring of 1804 the party embarked in boats on the broad current of the "Big Muddy." They spent some days with Daniel Boone, who was then living at the last outpost of civilization in the *Femme Osage* district on the Missouri. He advised the explorers to turn back, saying that no white party could make its way through the savage Sioux of Dakota. This was not cheering advice from the most daring and renowned Indian-fighter and hunter in the west, but the intrepid explorers refused to turn back. By October they reached a village of friendly Mandan Indians, near the site of Bismarck, N. D., and decided to camp there for the winter.

None of these plains Indians had ever seen the Great Falls of the Missouri or the western mountains, and they tried to induce the explorers to abandon the enterprise. Living in the village were a young French-Canadian fur-trader and his Indian wife. Daughter of a Shoshone chief, a mountain tribe, she had been captured in a raid by the Sioux five years before and sold to the French *voyageur*. Light of foot, merry of heart and with a singing voice, she had learned French *chansons* from her affectionate white husband, and was called Bird-Woman by the Mandans, who regarded her as a superior being. She had long before given up the idea of ever again seeing her old home in the Idaho mountains, when these white explorers revived the hope. Chaboneau, her husband, knew the plains, she the mountains. Together they undertook to guide the party to the Pacific. The leaders of the expedition demurred at taking a woman with a baby, but she argued with convincing eloquence. She could march, she could row, she could swim, she could load a canoe, catch fish, shoot game, set up a tent, cook, make a campfire and moccasins. She had noted the courses of the mountain streams and passes and the Sioux and Shoshone trails.

She knew the habits of mountain animals, where to find food in the barren land, water in the desert. And she could carry her baby on her back — he should trouble no one.

It is well that she prevailed. In April, 1805, Bird-Woman stepped into one of the six canoes that pushed out into the Missouri. Within a week they reached the Yellowstone, and were climbing the long slope. Boats had to be towed, hunters foraged for game. Rocks and thorns wore out the moccasins as fast as the industrious Bird Woman could make them. Late in May they had their first glimpse of the snowcapped peaks of the Rockies — then that burst of glory above the plains — the Great Falls — a veil of spray 80 feet high descending between lofty cliffs of solid rock. It was Chaboneau who showed the explorers how to make wheels of cross-sections of the cottonwood, on which to carry the boats the 20 miles around the Falls. But from that on Bird-Woman was the guide. They had passed the gate of the Rockies and were in a labyrinth of streams and passes. At the three forks of the Missouri she took the South Fork — the Shoshone trail. Straight as an arrow she made her way back to her old home. After that long journey the sight of the tepees and grazing ponies in the Shoshone valley was a welcome sight. Leaving Bird Woman and Chaboneau to visit her brother, the chief, Shoshone guides led the explorers across the coast-range to the Pacific. The last stage of the journey was by boat on Columbia River. They reached its mouth and camped on the Pacific Ocean beach, Nov. 15, 1805. There they spent the winter. Chaboneau and Bird Woman returned across the mountains with them to the Mandan village in the spring, and were paid $500 for their serivces, a sum sufficient to build them a good cabin and buy many horses and ponies. A statue of Bird Woman, with her pappoose on her back, was one of the attractive features of the Lewis and Clark Exposition at Portland, Oregon, in 1905.

The explorers reached the Mississippi again in September, 1806, very much to the astonishment of everyone, including Daniel Boone. By many they had been given up for dead. It was scarcely believed that, though they had gone through incredible toil and hardship, they had been in very little real danger and had not encountered the terrible Sioux. The reports of the expedition excited the liveliest interest — the vast, fertile plains, the lofty mountains and the beautiful valleys and mild climate of the Pacific Coast fired the imagination. The members of the exploring party were given honors and large grants of land. Mr. Lewis was appointed governor of the Territory of Missouri. The arduous labors and mental strain of the expedition, however, had unbalanced his ardent, active mind and, in a fit of insanity, in October, 1809, he committed suicide at the age of 35. Captain Clark returned to the army. Settlement of the Missouri River country was steadily resisted by the Sioux until they were conquered in the 70's. The discovery of gold in California in 1848 was followed by the building of the Union Pacific railroad across the old Louisiana Territory. It was completed in 1869. The Northern Pacific of the 80's and the Great Northern, terminating at Puget Sound and opened in 1893, now cross the region explored by Lewis and Clark more than a hundred years ago. The natural wonders and beauties of the Yellowstone region, first discovered by them, are now preserved in the National Park.

Lew'iston, an important manufacturing city in Androscoggin County, Me. It is situated 36 miles north of Portland, on the left bank of Androscoggin River, being connected by several bridges with Auburn on the opposite bank. As the river here falls nearly 50 feet, Lewiston has an abundant supply of water-power, which has been turned to great advantage by manufacturing establishments. There are quite a number of manufacturing companies and corporations in the city, the value of their annual products exceeding $15,000,000. Chief among these industries is the manufacture of cottoncloth and woolen goods; next in importance the bleaching and dye works (for bleaching and dyeing cotton materials). There are, besides, a large boot and shoe factory, several establishments which furnish supplies for the cotton and woolen mills and a number of other industries. Lewiston has excellent public and parochial schools, several churches, two fine hospitals, an orphan asylum etc. Bates College, which has its seat here, was founded by the Free Baptists in 1863, Benjamin E. Bates of Boston contributing $200,000 to its endowment. It is co-educational, and was the first college in New England to receive women. Lewiston was incorporated as a village in 1795, but did not receive a city charter until 1863. Population 37,000

Lex'ington, a city of Kentucky, county-seat of Fayette County, stands in the famous blue-grass region at the junction of five railways, about 80 miles from Cincinnati. The surrounding district is noted for beauty and fertility, and the town has been laid out in attractive style. Lexington was the home of Henry Clay; and its West End cemetery contains an imposing monument to his memory. The University of Kentucky was moved to Lexington in 1865, and Transylvania University was merged in it; the city also contains the state Agricultural and Mechanical College, the Kentucky Reform School, Sayre Female

Institute, Kentucky University (Christian), St. Catherine's Female Academy (R. C.) and Lexington Normal Institute (colored). It manufactures harness, saddlery, flour, canned goods, lumber, carriages, wagons and tobacco products. The town was named in 1775 in honor of the first battlefield of the Revolution, the news of that fight reaching the early settlers while they were laying out the town. Population about 48,000

Lexington, a village of Massachusetts, ten miles from Boston, where the first battle of the Revolution was fought on the 19th of April, 1775. On the night previous Paul Revere, escaped from Boston, brought word to Lexington that a detachment of British troops were preparing to march to Concord, to seize the provincial stores and cannon at that place. About midnight the call to arms was sounded, and the militia turned out and remained under arms until morning, when the English under Major Pitcairn were seen approaching the common adjoining the village. The militia being drawn up here, Pitcairn advanced upon them with a largely superior force. As the militia refused to obey his command to disperse, he ordered his men to fire. A discharge of musketry followed, with the result that four of the militia were killed and nine wounded. The British then moved on to Concord; and on their return were attacked by the militia in the western part of Lexington, and a sharp contest took place in which several men were killed. The British force would probably have been totally destroyed, if re-enforcements had not arrived from Boston under Lord Percy. A monument was erected in 1799 to commemorate this battle. Population 7,000

Lexington, a beautiful village, county-seat of Rockbridge County, Va., on North River, 30 miles from Lynchburg and 110 from Richmond. It manufactures agricultural implements, flour, lumber and dairy-products. Valuable deposits of sulphur ore are in the vicinity, and there are mineral springs. These are popular resorts. The natural bridge, one of America's curiosities is 15 miles distant. Lexington is served by the B. and O. and Chesapeake and Ohio railways. It contains Washington and Lee University and Virginia Military Institute. Robert E. Lee and "Stonewall" Jackson are buried here. Population 3,200.

Leyden (*lī'den*), **Lu'cas van,** Dutch painter and engraver, was born at Leyden in 1494. He painted a picture of St. Hubert when 12, and *Mahomet and the Monk Sergius* was engraved when he was only 14. He practiced nearly every branch of painting, his range of subjects being wide and embracing events in sacred history, incidents of his own times and portraits. He died at Leyden in 1533, after having been confined to his bed for six years. His *Hill of Calvary* is generally considered his masterpiece. His real name was Lucas Jacobsz.

Leys (*līs* or *lā*), **Henri Jean Auguste,** Belgian painter, was born at Antwerp, Feb. 18, 1815. He was created a baron by Leopold I in 1862. Leys is one of the best modern artists in the style of the old Flemish masters; and his most valuable pictures are inspired by the history of his native land. He spent most of his life in his native city and died there Aug. 26, 1869.

Lhasa (*lhä'sá*), ("the seat of the gods"), the capital of Tibet (*q. v.*) and the sacred city of the Buddhists, is situated 12,000 feet above the sea, and is surrounded by mountains ranging from 2,000 to 4,000 feet above that altitude. The resident population is about 20,000 and the city is an important trading as well as ecclesiastical center. See Candler's *Unveiling of Lhasa,* Hedin's *Through Asia* and Landon's *Opening of Tibet.*

Lia'nas, the name given to those plants in tropical forests which twine around trees for their support. Such plants are comparatively rare in colder climates, although there are a few examples, as the honeysuckle and some species of clematis. As these often overtop the hedges or bushes on which they grow and fall down by the weight of their leaves, so the lianas of tropical countries overtop the largest and tallest trees and, descending to the ground in vast festoons, pass from tree to tree and bind the whole forest in a maze of network, often by cables as thick as those of a ship. Many forests thus become impenetrable except with the aid of an ax or hatchet, and the beasts that inhabit them pass either through narrow paths kept ope by constant use or from bough to boug above the ground. Many lianas become almost tree-like in thickness, and often bind the trees with such force as to kill them. No tropical flowers excel in splendor those of some lianas, and among them are also found a few valuable medicinal plants See CLIMBING PLANTS.

Libe'ria, a negro republic, on the coast of West Africa between Senegambia and the French Ivory Coast, and extending north and east of Cape Palmas. Its area embraces about 45,000 square miles. The coast-line measures 350 miles, and, though the eastern boundary has never been definitely drawn, the republic is supposed to extend inland about 200 miles. The coast is low, but about 20 miles inland the surface begins to rise, and is well-wooded and watered by numerous streams.

Natural Resources. Rubber is obtained, iron is plentiful, gold and copper exist in small quantities, and zinc, monazite, corundum, lead, lignite and some diamonds occur in the interior, but never in paying quantities. The rubber industry is in the hands of a liberal corporation. The soil is fertile and well-adapted to the growth of tropical fruits, especially rice and cotton. The chief exports are coffee, palm-oil, palm-kernels, rubber, cocoa, sugar, arrowroot, ivory, hides and caoutchouc.

History. Liberia owes its orgin to the American Colonization Society, which in 1821 bought and settled emancipated slaves on it. In 1847 Liberia was acknowledged as a free and independent government by England and the United States, and since that time it has greatly enlarged its territory. The constitution is modeled largely on that of the United States, the president and members of the house of representatives (14 in number) being elected every four years and senators (9 in number) every six years. There is no standing army, but all citizens capable of bearing arms are enrolled in the militia and compelled to do military duty whenever called on. Slavery is illegal, and religious toleration exists. The state debt (originally $500,000), on which no interest had been paid since August, 1874, was scaled in 1899. In 1899 the principal was about $400,000, and the arrears of interest about $100,000. Since 1899, however, the current interest has been paid yearly. During 1906-7 a British company invested nearly $500,000 in the development of Liberia, a statistical bureau has been established, and trade-conditions are improving. In 1906 the income was $330,000, and the expenditure $290,000. The general progress has not been equal to expectations, as the republic does not find much favor with the native negroes, and the American emigrants have deteriorated rather than advanced in many respects; but the state shows considerable appreciation of education and religion and a keen desire to stand well in the opinion of the various governments with which it sustains diplomatic relations. The population is variously estimated from 1,500,000 to 2,120,000, all of the African race, and about 60,000 are American liberated slaves and their descendants. The capital is Monrovia (population about 8,000). See Wauwermans' *Liberia.*

Li'braries. "Of making many books there is no end," and the beginning of this process dates as far back as the records of civilization. As a result of men's reducing their thoughts to writing, there were collections of books in the most remote nations of antiquity. As early as 3800 B. C. Sargon I. the Semitic ruler of Accad, founded a library in that city. The name of the keeper of Sargon's library, Ibnisarru, the most ancient librarian on record, is preserved on his seal which has come down to us. Libraries of a similar kind existed in the chief cities of Babylonia, and their contents (or copies) and translations from them were gathered to form the great Assyrian library established at Nineveh by Assur-bani-pal. In ancient Egypt there was an immense literature, and over the door of the library of Rameses I was the inscription ' Dispensary of the Soul." There also was a great library at Memphis at a very early date; but the greatest of all ancient libraries was that established by the Ptolemies at Alexandria in the 3d century B. C. The ancient Hebrews carefully preserved their sacred writings in the temple; and the kings of Persia also made collections of books and archives. Of the ancient Greeks, Pisistratus is said to have been the first to collect a library, although some authorities make Aristotle's collection the first.

It is characteristic of ancient Rome that the first great libraries of the city should have been derived from the spoils of war. It was a favorite project of Julius Cæsar to establish a great public library, which should contain all the works in Greek and Latin literature; but as he was killed before this design was carried into execution, it was left to his successor, Octavius Cæsar, who founded two libraries, the Octavian and the Palatine, the latter of which continued in existence till the time of Pope Gregory I (A.D. 540-604). Other libraries were established by subsequent emperors, the chief of which was the Ulpian, established by Trajan. When Constantine became emperor, he began to collect the Christian books which had escaped the persecution of Diocletian. This library was enlarged by his successors to 120,000 volumes, but was partially burned in the 8th century.

During the irruption of the barbarians most of the ancient collections were destroyed by fire; and, although the ancient literature was neglected by the Christians, the germs of our modern libraries were accumulating in the cloister. The monks of St. Benedict were the especial collectors, translators and book-makers of the middle ages.

In England the establishing of public libraries hardly began till the 17th century; and it is not until the middle of the 18th century that we hear of the earliest circulating library established at London. But in the 19th century interest awakened, and in 1850 an act of parliament was passed giving certain districts power to tax their inhabitants for the purpose of establishing free libraries. Under the operation of this act more than 200 such libraries have been founded in different parts of the kingdom. At present it is estimated that there are 203 cities and boroughs which have been equipped with close upon 6,000,000 books, having, it is calculated, nearly 50,000,000 readers. Of the older libraries of the Unite

Kingdom by far the most important is the British Museum at London, which has over 2.000,000 printed books, and is exceedingly rich in Egyptian, Assyrian, Greek and Roman antiquities, illuminated missals, manuscripts and maps. The English act was extended to Scotland in 1854. In Dublin the library of Trinity College contains about 300,000 volumes, and the national library of Ireland numbers over 100,000.

France is remarkable for the number of provincial libraries open to the public, while its capital is better provided than any other city in Europe. The *Bibliothéque Nationale* is of ancient origin and contains more than 3,000,000 volumes — the largest library in the world. Fourteen other libraries, most of which are open to the public, add over 1,000,000 to the volumes accessible to the people of Paris. The school library also is a very important feature of the French system. In 1862 it was ordered that a library should be attached to every primary school. These libraries contain books for adults as well as children and are widely patronized by all classes.

Throughout the German empire the libraries of the states and the universities are well supplied with books, and in Berlin there are over 70 libraries. Italy, as might be expected, has a number of richly furnished libraries, but all yield in interest to the Vatican library at Rome, which probably is the oldest in Europe (1447). The Vatican is the private library of the pope; but all scholars gain access by permission.

There are several university libraries in Russia, which generally are open only to members of their several bodies; but the imperial library at Petrograd, containing nearly 1,500,000 volumes, is open to all persons over 12 years of age.

In the United States but little interest was shown in the establishment of public libraries during the first half of the 19th century, but since the close of the Civil War the accumulation of books has gone on very rapidly. At present the number of registered public libraries is over 10,000, containing upwards of 60,000,000 volumes. Among the older collections is that of Harvard University, the number of whose volumes has increased from 72,000 in 1850 to over 800,000. Yale University library has increased from 21,000 to 550,000 volumes. Nearly every state has established an official library to which admission is free; the largest of these is the library of New York, containing 160,000 volumes. Mr. Carnegie, besides founding or aiding numberless educational institutions, has donated over 40 million dollars to libraries in Great Britain and the United States (See CARNEGIE). Astor library in New York city, founded by John Jacob Astor, contains 250,000 volumes, and its endowment provides for an annual expenditure of $18,000 in the purchase of books. In 1895 a consolidation was formed, under the title of the New York Public library, of the Astor library, Lenox library and the Tilden trust, the home of which now is at Fifth Avenue and 42nd Street. The Congressional library at Washington is the national library of the United States, and the building in which it is placed is the largest library building in the world. To-day its book-collection is close upon 1,500,000 volumes.

Libraries, How to Use. The average public library is much frequented; it is the school or reference library that is likely to be neglected, and that because the student is ignorant of how to proceed for himself to find the information which he desires. His idea of reference work is usually bounded by an encyclopedia or two; if he fails to find there what he needs, he is apt to become discouraged and feel that the library, as far as he is concerned, is useless. As a matter of fact, the encyclopedia merely is an index to the vast funds of material to be found elsewhere in the library. Besides the brief treatment which it gives of a subject, it may be valuable for its suggestion of another subject under which further information may be found.

After the cross-references in the encyclopedia have been exhausted, the student should gather the headings which he has consulted and turn to the card-catalogue. This may be attacked from three sides; it is divided according to authors, subjects and titles. Each book has an author, a subject and a title card. Plutarch's *Lives of Illustrious Men*, for example, may be looked for under the author Plutarch, under the subject, Biography, and under the title, *Lives of Illustrious Men*. Thus a student who comes with very little knowledge of a book may be able to place it under at least one of these headings. The numbers always found in the upper left-hand corner of the card denote the classification; and it is very convenient to have a general idea of the subjects which these numbers represent and of their location in the room. For general reference works one should learn to be independent of the librarian.

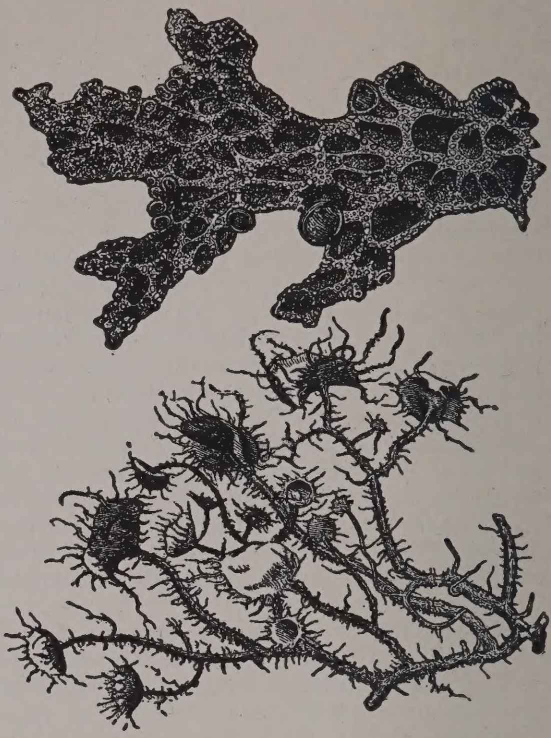
The *Reader's Guide to periodical literature*, is issued monthly and cumulated quarterly. Poole's *Index*, indexes the best periodical literature of the 19th Century and is necessary for all reference libraries. Good material appears in such magazines as the *Nineteenth Century*, *Atlantic Monthly*, *Review of Reviews*, *World's Work*, *Harper's*, *The Century*, *Scribner's* and the various periodicals devoted to education, science, philosophy, psychology and art, whose name is legion. Such material is made readily accessible by means of the indexes mentioned above. It is the primary source from which the student may gather information upon topics of immediate contemporary interests.

The standard books of general reference include such encyclopedias as the *Britannica, Americana, Century Cyclopedia of Names*, the *New International, The Dictionary of National Biography* (British) and encyclopædias and dictionaries of American biography. For the data connected with the lives of prominent living personages, *Who's Who* and *Who's Who in America* are handy gazeteers. Many statistics of public interest and often a summary of the chief historical events of the preceding year are to be found in annual almanacs, such as are published by several of New York's leading newspapers.

Among the best dictionaries are: (English) the *Oxford* and *New English* dictionaries, *Century, Webster, Standard* and *Worcester*; (French) *Larousse, Littré* and *Bescherelles;* (German) *Fliegel's* and *Grieb's*; (Spanish) *Velasquez;* (Latin) *Lewis and Short, Harper, Andrews* and *Riddle and Arnold;* (Greek) *Liddell and Scott* and *Robinson.* In addition, dictionaries may be found for every individual subject: music, philosophy, history, art, science and so on. A little determined practice in the use of such books should give the student a habit of verification, which should tend to make his information facile and exact.

Library of Congress, The, at Washington, D. C., is the American national library, housed in the finest library building in the world and ranking among the world's best libraries. This is the more remarkable, because in 1814 it was destroyed in the burning of the capitol by the British, and was again partially destroyed in 1851 by fire. The present building was completed in 1897 at a cost of $6,347,000, and will accommodate 2,200,000 octavo volumes. It is freely open for reading and reference purposes; but the books are not lent for home-reading to the general public. The catalogue cards, reference lists and annual reports of the Congressional Library are of great value to all libraries of the United States. The librarian will assist research workers by lists of books upon the topic of his reading; but requests for such aid should be sent through the librarian of the institution through which most of his work is done. The library catalogues all American copyright publications. It has a staff of no less than 400 employees, exclusive of caretakers etc. Some of its chief publications, in addition to the reports of the librarian, are *A Union List of Periodicals; A Check List of American Newspapers in the Library of Congress; A List of Maps of America; A Calendar of Washington Manuscripts;* and a very large number of topical lists on such subjects as the theory of colonization, mercantile marine subsidies, the Danish West Indies, Porto Rico, the Monroe Doctrine or the Philippines.

Lichens (*lī'kĕns*). Plants which are abundant everywhere, forming various-colored splotches on tree trunks, rocks, old boards etc. and growing also upon the ground. They are of great scientific interest from the fact that they are not single plants, but each lichen is formed of a fungus and an alga living together so intimately as to appear like a single plant. The lichens furnish one of the best illustrations of symbiosis (which see). The fungus makes the bulk of the body with its interwoven mycelial threads, and in the meshes of these threads live the algæ. Upon the surface of the lichen body the fungus at certain times develops cup-like or disk-like bodies with brown or black or more brightly colored lining. These bodies are the apothecia (which see) in which the asexual spores are produced. Lichens have a peculiar and effective method of vegetative propagation. Upon the surface of the body there are commonly seen minute granules which sometimes give the body a dusty appearance. These granules are called soredia, and each consists of a few cells of the alga surrounded by threads of the fungus. These soredia are blown off, and are really small colonies to start new lichen bodies. The lichen fungus is for the most part an ascomycete (which see), and the accompanying alga is mostly one of the blue-green forms. (See CYANOPHYCEÆ.) By many it is thought that the fungus and the alga are mutually helpful in this intimate relationship, and if so it would be that form



TWO FORMS OF LICHENS

of symbiosis known as mutualism (which see). The claim is that the fungus, being unable to make food for itself, uses the food made by the alga; while on the other hand the alga is protected from drying out by living in the sponge-like interior of the fungus mycelium. There are others who claim that this is a case of helotism (which see), in which the alga is not benefitted by the presence of the fungus but is held in slavery by it. In any event the combination produces a structure which is able to exist where neither one could live alone. As a consequence, lichens are able to grow in the most unfavorable places. About the last plants one finds when going north or up a high mountain are the lichens; and they are about the first plants to be found upon rocks brought above the surface of the ocean. In such exposed situations the fungus could not live, because it depends upon other organisms; and the alga could not live, because it would be dried out speedily; but the two can live together. In this way lichens play a very important part in the first stages of soil formation on bare rocks. There are three general forms of the lichen body, which may be distinguished easily: (1) crustaceous, in which the body resembles an incrustation upon rock, soil, etc.; (2) foliose, with flattened leaf-like bodies, attached only at the middle or irregularly to their support; and (3) fruticose, with filamentous bodies branching like shrubs, either erect or hanging or prostrate.

John M. Coulter.

Lick Obser′vatory is on Mt. Hamilton, 26 miles east of San José, Cal. For the erection and equipment of this observatory $700,000 were left by James Lick (1796–1876), a San Francisco millionaire and philanthropist whose remains are interred in a vault within the foundations of the pile that supports the great telescope. This instrument has an object-glass of 36 inches in aperture, the founder requiring it to be "superior to and more powerful than any telescope ever yet made;" and it is provided with an attachment which enables it to be used as a gigantic camera in photographing the stars.

Lid′don, Henry Parry, an English divine, was born at Stoneham, England, in 1829, and graduated at Christ College, Oxford, in 1850. In 1867 he delivered his famous Bampton lectures on *The Divinity of our Lord.* In 1870 he became canon of St. Paul's Cathedral, London, and was appointed professor of scriptural exegesis at Oxford University. He resigned his professorship in 1882, on account of ill-health, and for the same reason afterwards declined a bishopric. Canon Liddon was distinguished as one of the ablest and most eloquent preachers of the Church of England; and his sermons and writings exercised profound influence upon thought. He died suddenly at Weston-super-Mare, Sept. 9, 1890.

Liebig (*lē′bĭg*), **Justus,** Freiherr von, a distinguished German chemist, was born at Darmstadt, May 12, 1803. After obtaining the M.D. at Erlangen in 1822, he went to Paris to continue his studies. There he made the acquaintance of Humboldt, who secured for him the professorship of chemistry in the university at Giessen. This chair he exchanged in 1852 for the corresponding one at Munich. Liebig was one of the most illustrious chemists of his age, and was distinguished alike for his original researches and investigations and for the applications which he sought to make of his science to practical life. As the inventor of the extract of beef and the prepared infant food, his name is known throughout the civilized world; but from a scientific point of view these commercial inventions were comparatively unimportant. By his investigations in organic chemistry and his improvements in the method of analysis of organic compounds, he rendered such service that he became the father of modern organic chemistry. He was the founder of agricultural chemistry, and thus the greatest reformer of practical agriculture in the 19th century. Liebig was created a baron in 1845, and professorships were offered him in England, Heidelberg, Vienna and other places. He died at Munich, April 18, 1873.

Liége (*lē-āzh′*), a large manufacturing city of Belgium. Situated in the center of the eastern mining district, Liège is one of the first manufacturing cities of Europe. Its great staple is firearms. Liège is a beautiful city, with elegant bridges, handsome squares and gardens and numerous fine churches and private houses. Liège was conquered by the French in 1691, in 1702 by the English, and again by the French in 1792. The province was incorporated into Belgium in 18 1; its area is 1,117 square miles, with a population of 826,175. Liège has a state university, with special schools of engineering, arts, manufactures, mining etc. and an attendance of 1,236 students. Population of the city 176,893

Liegnitz (*lēg′nĭts*), a town of Prussian Silesia, on the Katzbach, 38 miles from Breslau. The town dates from the latter part of the 10th century, and came into the hands of Prussia in 1742. Here in 1760 Frederick the Great routed the Austrians under Leudon, and on the banks of the river, in 1813, was fought a great battle between the French under Marshal Macdonald and the Prussians under Blücher, in which the latter were completely victorious. The town is a place of great industrial activity. Population 66,620.

Life′boat is a strong boat for saving shipwrecked people, and is so built that it can not be sunk or destroyed, and, if capsized, can right itself. Lionel Lukin of London, England, patented a lifeboat in 1785, and in 1789 Henry Greathead constructed a better one, inventing a curved keel. Till 1851 Greathead's model remained almost the only lifeboat used. But it could not discharge water, nor right itself when upset. Then James Beeching of Yarmouth constructed the first self-righting boat, and Peake of Woolwich designed another, which was improved by many men and so became the standard. The model lifeboat has great resistance against upsetting; is speedy against a heavy sea; is easily launched; discharges water immediately by relieving-tubes; rights itself if overturned; is exceptionally strong; and carries many people. Its length is 33 feet, its width eight feet, — a great breadth of beam in proportion to the length.

Life-Preser'vers, a buoy or belt designed to be attached to the person for the preservation of life in shipwreck. They are generally made of cork covered with canvas, or of indiarubber inflated with air. Many varieties of life-preservers have been devised, among which we mention the life-belt designed by Admiral Ward in 1854. It has four separate compartments, so that if one should be punctured, the belt's buoyant power would not be destroyed. There also are life-preserving jackets; life-floats; annular life-preservers; life-preserving trousers and suits. Life-preservers of many other forms and materials have been devised; and ships are required to carry a sufficient number for the safety of all passengers.

Life-Sav'ing Ser'vice. Lighthouses and beacons have been built along the seacoasts of Europe and the United States, and, in addition lifeboat stations have been established, with organized crews for the rescue of all shipwrecked persons. In the United States alone more than 11,000 lives were saved by this service in the first ten years (1871-81) of operation. The shores of the United States — lakes and seas — are over 10,000 miles in extent, and this entire line is divided into 12 districts with 278 stations. Two hundred are on the Atlantic, 60 are on the lakes, and 17 on the Pacific. At many stations the English lifeboat is used, although in general it has been found too heavy for efficient service. The boats chiefly used are light, and can, on their transporting carriages, be easily dragged along the shore by their crews. For projecting a line to a stranded vessel the mortar is generally preferred to the rocket. In addition to the traveling life-buoy a metallic car is used, which will hold a small number of persons, who enter it by a small manhole and are shut in and safely drawn ashore, even though overturned by the surf. This clever contrivance has been the means of rescuing many invalids, children and aged persons.

Light may be roughly defined as that which produces the sensation of sight. Just what light really is will be clearer after we have considered some of the phenomena of light; since from these only can we deduce the nature of light. The fundamental phenomena perhaps are the following:

1. In any homogenous medium light travels in straight lines. The strongest evidence for this statement is obtained from the fact that computations, based on the assumption of this fact, invariably lead to correct results. A partial exception to this rule should be noted in the case in which light passes through very small openings. Here some of the rays are deflected from a straight line in accordance with the principle of *diffraction.* See DIFFRACTION.

2. When a ray of light strikes upon a polished surface, the ray is sent off in another direction. This phenomenon is called *reflection.* By numerous experiments, it has been found that the angle between the incident ray and the normal to the reflecting surface is always equal to the angle between the reflected ray and the normal. This fact is generally expressed by saying that the angle of incidence is equal to the angle of reflection. It is found also that the angle of reflection lies in the same plane as the angle of incidence. One proof for these two laws of reflection is the fact that the image of any object in a plane surface is of the same size and shape as the object.

3. When a ray of light traveling in one medium strikes the bounding surface of another medium, a part of the light is reflected according to the laws just stated, but another part enters the second medium, and in so doing has its direction also changed. The entering ray is said to be *refracted.* Thus it is found that a ray passing from the bottom of a creek to the surface and thence to the eye of an observer is bent away from the normal to the surface of the creek at the point where it leaves the water. In like manner, if a ray enters the water from the air, it is always bent toward the normal. The first satisfactory description of these phenomena was given by Willebrord Snell (1591-1626), and is now known as Snell's law. If we define the angle between the refracted ray and the normal as the *angle of refraction,* then Snell's law is that the

$$\frac{\text{sine of angle of incidence}}{\text{sine of angle of refraction}} = \text{constant}.$$

This constant is called the *index of refraction* for the medium under consideration, and may be denoted by n, so that we may write

$$\frac{\sin i}{\sin r} = n = \text{refractive index},$$

where i and r denote the angles of incidence and refraction respectively.

4. Light travels with a finite speed. This was first proved by Römer, the Danish astronomer, at Paris during 1675-76. The fact that, when a landscape is illuminated at night by a flash of lightning, all parts are seen apparently at the same time, led the ancients to think that the speed of light was infinite. Römer found the speed in a vacuum, *i. e.*, in the space between us and the sun, to be 309 million meters per second. Professor Michelson's determination of this quantity, the most accurate determination which has been made, gives 299,853,000 meters per second. In 1850 Foucault, the French physicist, showed that light travels more slowly in all kinds of matter than it does in a vacuum. In water its speed is only three fourths as great as in ordinary glass and two thirds as great as in a vacuum.

5. In the first years of the 19th century Thomas Young of London showed that two rays of light might be added together in such a way as to produce darkness; in other words, that two rays might *interfere*. (See INTERFERENCE.) Young's experiment is most easily repeated by holding immediately in front of the eye a visiting card (or, better, a piece of photographic plate) on which are cut two very fine slits about ¼ millimeter apart. In looking at any small source of light, the beams coming through these two slits will be so diffracted as to overlap; and where they overlap, they will sometimes interfere to produce brightness and sometimes interfere destructively, producing darkness. The result is that through the card one sees a series of alternate bright and dark bands.

6. Newton (1643-1727) showed that a ray of white light is composed of many colors — what we call the colors of the rainbow, viz., red, orange, yellow, green, blue and violet. This he accomplished by the use of two prisms.

7. In 1669 Bartolinus, a Danish philosopher, discovered that a ray of light which has passed through a crystal of Iceland spar behaves very differently from ordinary light. First of all, it is split into two other rays, which emerge from the crystal in slightly different directions. If one of these transmitted rays be allowed to pass through a second crystal of Iceland spar, the effect produced depends very much upon how the second crystal is held; it depends, in fact, upon the angular position of the second crystal considered with reference to the incident ray as an axis. Rays of light having this property are said to be *polarized*.

NATURE OF LIGHT

Any idea of light which is at all satisfactory must explain at least the seven fundamental phenomena which have just been described. There are many other phenomena which are fundamental and which must also be explained by any satisfactory view of the subject; space, however, prevents their introduction here. It is the great merit of Huygens, Young and Fresnel to have shown that, *if we assume light to be a transverse wave-motion of the ether*, all these seven phenomena can be easily explained. (See ETHER, HUYGENS, FRESNEL and YOUNG.) Since no other hypothesis has been offered that will explain these phenomena, we conclude that probably light is a wave-motion of the ether. For details of the explanation of these seven phenomena in terms of the wave-theory see Preston's *Theory of Light*. For applications of the principles of light to various optical instruments see LENS, SPECTROSCOPE, EYE, CAMERA, TELESCOPE, MICROSCOPE. For a beautiful elementary treatment see S. P. Thompson's *Light, Visible and Invisible*, and Lommel's *Nature of Light* (International Science Series.) For the physiological effects of light see Bidwell's *Curiosities of Light and Sight*.

HENRY CREW.

Light-Horse Harry. See LEE, HENRY.

Light'house, a building erected on some conspicuous part of the seacoast, from which a light is shown at night to guide mariners, and which serves as a landmark by day. A sea-light is thus defined by Alan Stevenson, the noted lighthouse architect: "A light so modified and directed as to present to the mariner an appearance which shall at once enable him to judge of his position during the night in the same manner as would the sight of a landmark during the day." The history of lighthouse construction and illumination covers over 2,000 years; but the modern plan of construction dates back no further than the beginning of the 19th century. The first lighthouse tower of which we have record was that built by Ptolemy Philadelphus on a small island in the bay of Alexandria about 300 B. C. This structure was deemed by the ancients one of the Seven Wonders of the World, and the name of the island, Pharos, was given to all lighthouses built by them. The Romans built lighthouses at Ostia, Ravenna, Puteoli and other ports; but none of the early lighthouse buildings is in existence. On the cliff at Boulogne are the remains of a lighthouse ascribed to Caligula (40 A. D.), and at Dover may be seen the remains of another Roman pharos. Cordouan, at the mouth of the Garonne, has seen all the improvements, from the open grate in which wood and coal were burned to the dioptric light combined with a four-wick lamp. There were only 25 lighthouse stations in England at the beginning of the 19th century, but at present there are 1,000 coast and harbor lights. Some of the more notable lighthouses round the British Isles are the Eddystone, Skerryvore, Bell Rock, Wolf and Bishop's Rock In the United States the first act of Congress in reference to lighthouses was passed in 1789, and there are about 3,000 lights and buoys on the seacoast and lakecoasts.

Most of the earlier lighthouses were constructed as aids to coasting on inclosed waters and straits rather than as aids to open-sea navigation; and therefore great height of tower was seldom required. Elevated spots were of course selected for seacoast lights; but even in the early history of navigation it was seen that there were many dangers to ships and seamen that could not be avoided by lighthouses constructed on land. It therefore became a problem of engineering to build them upon solid rock a greater or lesser distance from the mainland, and so that they must be able to withstand not only the heaviest winds and storms but the tides and waves of the sea. The most noted case is that of the Eddystone lighthouse (which see). The use of lamps led to the invention of reflectors, the early ones being about 18 inches in diameter. It was reserved for Argand to devise the cylindrical wick-burner, and in 1822 Augustin Fresnel contrived the dioptric system for lighthouse purposes. Electric lights have been used to some extent; but there are some disadvantages connected with the generation and use of electricity, which have thus far prevented its general adoption. A light at an elevation of 40 feet above the sea — its power and intensity supposed to be adequate — will have a range of about 7 miles; at 100 feet, a range of 11 miles; at 200 feet, a range of 16 miles; and, as the mariner's eye is generally supposed to be about 15 feet above the water, to each of these estimates must be added the range for that elevation, four miles and a fraction. See D. P. Heap's *Ancient and Modern Lighthouses.*

Light'ning, an electrical phenomenon taking place in the earth's atmosphere. Immediately after the discovery of the electrical machine a similarity between its discharge and the lightning discharge was noticed. But it was not until Benjamin Franklin obtained a discharge from clouds by means of a kite that the connection between electricity and lightning was thoroughly established. It is evident that lightning consists in a discharge sometimes from the cloud to the earth and sometimes from one cloud to another. But what causes these charges, how the clouds become electrified, has not yet been explained.

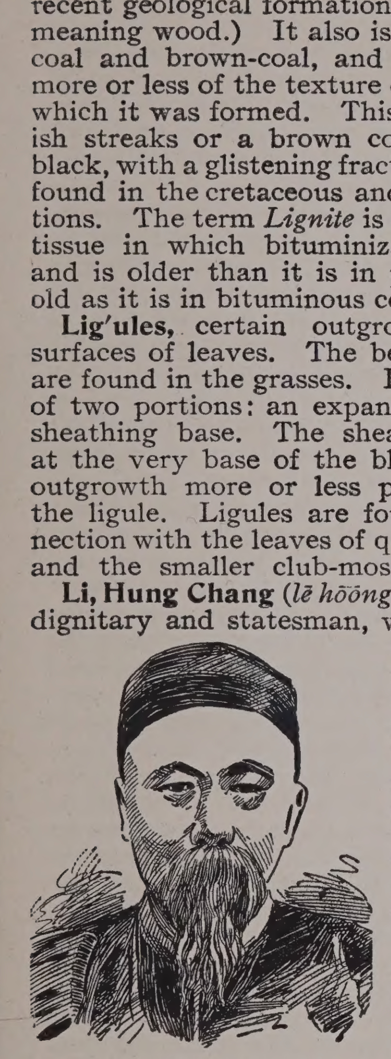
At various meteorological stations over the surface of the earth the electrical potential of the earth's atmosphere is daily measured. But the electrical pressures thus determined are infinitesimal when compared with those which produce lightning; and the connection of the differences of potential in the thin layer of air, which can thus be measured, with the weather is very imperfectly understood. It is well-known that in the ordinary Leyden jar discharge the electrification surges to and fro several times before the discharge ceases. This is called an *oscillatory discharge.* There is some evidence, obtained from photographs of lightning flashes, for thinking that the discharge from cloud to earth frequently is oscillatory. See Lodge's *Lightning and Lightning Conductors.*

Lightning Arrest'er, a device for protecting electrical apparatus from lightning or atmospheric electricity. They are desirable whenever any part of an electrical circuit is outdoors. In some places, as in England, lightning mishaps are rare, while in other places, as in the Rocky Mountains, even with the best protectors it often is necessary during storms to shut down an electric plant on account of the danger from lightning. The lightning-discharges through the machines so puncture the insulation that the machinery is ruined. The ordinary lightning arrester, such as has been used on telegraph lines for many years, consists of an air gap with sharp points, so that the lightning discharge will jump across this gap and thus reach the ground sooner than pass through the apparatus. Practically all modern lightning arresters are on this principle, but for large dynamo circuits it is necessary to add some device for breaking an electric arc which will be formed across the air gap. In the Thomson lightning arrester this is done by having the poles of an electro-magnet opposite the air gap. This "blows out" the arc. In the Wurtz arrester the discharge is between a series of rods of non-arcing metals. A line may often be protected by stretching above it an ordinary barbed wire which is connected with the ground every few feet.

Lightning Rods, a device for protecting buildings and ships from the destructive effects of lightning. It has been proved that the most effective lightning rods are made by using flat strips of metal (practically either iron or copper) which at their upper ends are pointed, at their lower ends are connected with the earth in a thorough manner, and at intermediate points are connected to any portions of the building which are good conductors, as a metal roof or water pipes. The lightning rod in this form was suggested by Benjamin Franklin. Contrary to the popular idea, its chief function is not to protect the house which lies directly in the path of the discharge, but rather to prevent discharges by leading the induced charges off gently. (See ELECTRICITY.) Discharges as rapid as those which occur in lightning confine themselves exclusively to the outside of the conductor. It is essential, therefore, that the conductor present a large surface in order to carry off a large discharge rapidly. Glass insulators for lightning rods are no value, and may be of positive harm. Too much importance cannot be laid upon securing good ground connection. At sea this is easily secured by connecting with the copper sheathing of the vessel. On land a well, moist earth or the water-pipe system (never the gas pipe) makes a good "ground."

Lig'nite, most of the coals in the more recent geological formations. (Lat. *lignum*, meaning wood.) It also is known as wood-coal and brown-coal, and as a rule shows more or less of the texture of the wood from which it was formed. This coal has brownish streaks or a brown color shading into black, with a glistening fracture. It is chiefly found in the cretaceous and tertiary formations. The term *Lignite* is applied to woody tissue in which bituminization has begun, and is older than it is in peat, and not so old as it is in bituminous coal.

Lig'ules, certain outgrowths from the surfaces of leaves. The best-known ligules are found in the grasses. Each leaf consists of two portions: an expanded blade and a sheathing base. The sheath is prolonged at the very base of the blade into a scaly outgrowth more or less prominent, called the ligule. Ligules are found also in connection with the leaves of quillworts (*Isoetes*) and the smaller club-mosses (*Selaginella*).



LI HUNG CHANG

Li, Hung Chang (*lē hōōng chȧng*), a Chinese dignitary and statesman, was born in 1823 and took one of the degrees of the Chinese system in 1849. He first became prominent in connection with the Taiping rebellion in 1863, when he was associated with General "Chinese" Gordon in the recovery of Suchau and in driving the rebels from Kiangsu. For this he was created an hereditary noble. He was later made governor-general of the Liang-Kiang provinces, and in 1872 was appointed viceroy of the province of Chili. He had remarkable shrewdness and ability, and his dignities and honors came to him through his achievements and practical management of affairs. He was, for a Chinese, an advanced thinker and a friend to foreigners and to the culture and progressive ideas of European and western nations. He originated the Chinese navy and the only existing Chinese steamship line. He for years practically controlled the foreign policy of the empire. He was commander-in-chief of all Chinese forces during the war with Japan (1894), but was degraded from his position and deprived of his yellow jacket and peacock's feather. These dignities were returned to him for his skill in negotiating the peace with Japan. He made a tour of Europe and the United States in 1896, and upon his return to China was made foreign secretary of the empire. In 1898 he was again temporarily disgraced and excluded from the Tsung-li-Yâmen (Department of Foreign Affairs), but was reinstated and given a commissionership in southern China. When the Boxer rising occurred in 1900, Li became prominent as the representative of the empire in negotiations with the foreign powers. He died on Nov. 7, 1901.

Li'lac, species of *Syringa*, a genus belonging to the olive family and containing about 12 species, native to Asia and eastern Europe. The common lilac of cultivation is *S. vulgaris*, a shrub 10 to 25 feet high, with characteristic clusters of lilac or white fragrant flowers, blooming early in the season. This cultivated species is native to eastern Europe, and it has borne the following old names: pipe tree, blue pipe, blue ash and Roman willow. It is unfortunate that the name of syringa has been popularly applied to a very different plant, the mock-orange. The name of syringa (meaning a tube or pipe) was given because its stems once were used for pipestems.

Lil'y, a name applied in general to members of the great lily family, but technically belonging to species of the genus *Lilium*. The family is native to the north temperate regions, and contains over 200 species, half of which are said to be in cultivation. Their conspicuous shapes, brilliant flowers and erect habits have long made them among the best known and most prized of garden plants. The genus contains about 45 species, 15 native to North America. *L. tigrinum*, the tiger-lily, a native of China and Japan and commonly cultivated, has often escaped from gardens. In addition to the tiger-lily and some of the native forms, the easter-lily (*L. longiflorum*) is probably best known. This lily has been introduced from Bermuda, and is largely forced by the florists. Besides these forms there are numerous magnificent kinds which are little known in cultivation in this country. Among the common wild forms are *L. Philadelphicum*, the red lily; *L. Canadense*, the wild yellow lily; and *L. superbum*, the Turk's-cap lily. The wild red or wood lily is a beautiful member of the family; growing in deep woods, it stands out with startling vividness. The flower does not droop like the tiger-lily, but grows erect on a stalk about two feet high, is of a fine rich red spotted with purple or brown, the outside of the cup being orange-red. It blooms in July and August, and is found mostly in the north and west. The wild yellow or meadow lily is golden yellow, profusely spotted with rich brown; it blooms in June and July, the flowers droop ing gracefully from a height, one, two or three on a stem. The plant rises from three to five feet, prefers low, moist ground, grows from Nova Scotia to Georgia and to Missouri. The Turk's-cap lily resembles the preceding one, but is taller, its color a dark orange spotted with yellow, the flowers growing one above another, making a pyramid of richest, most gorgeous bloom. It abounds along the New England coast, and is found from Maine to Minnesota. Although the name in its narrowest sense is restricted to the genus *Lilium*, the name has been applied not only to numerous forms of the lily family but to other families, as the calla lily, Mariposa lily, pond lily, lily of the valley or water-lily.

Lille (*lēl*), a large manufacturing town, with an important military fortress, in France, 66 miles southeast of Calais. Part of its present site was occupied by a castle built by Julius Cæsar, but the city was not founded till the 9th century. Louis XIV conquered the town in 1667, and though it was captured by Marlborough and Prince Eugene in 1708, after a desperate and heroic defense by Marshal Bouflers, it was restored to France by the peace of Utrecht in 1713. It was besieged by the Austrians in 1792, but after a heavy bombardment they were compelled to retreat with great loss. Lille is noted for the manufacture of linen and cotton goods, there being numerous establishments for the purpose, and there also are chemical works, sugar works, breweries and numerous other manufactories. Lille has a university with several faculties and a large roll of student attendance. Population 217,807.

Lilliput (*lĭl′lĭ-pŭt*), the name of an imaginary realm described by Jonathan Swift in *A Voyage to Lilliput*, Part I of *Gulliver's Travels*. Lilliput and the Lilliputians are drawn on the scale of one inch to a foot, hence the use of the term for that which is diminutive in size. Professor Henry Morley derives the term Lilliput from *lilli* for "little" in Swift's "little language," and "put" was a term of contempt for a child, current in Swift's time.

Lil′y of the Val′ley, one of the numerous plants called lilies that do not belong to the genus *Lilium*. It grows without cultivation in bushy places and woods in Europe, Asia and North America; and abounds in the woods of Norway, Sweden and Germany. It is a universal favorite, on account of the beauty and fragrance of its white bells and the early season at which they appear. It therefore is often cultivated in gardens and forced to earlier flowering in hotbeds. False lily of the valley is the name given to one of our wild-flowers, *Unifolium Canadense*. The leaves bear resemblance to those of the true lily of the valley, but the white, downy flowers differ in character. The plant grows at the foot of old trees, on the edge of deep woods, blooms in May and June, and late in summer bears spikes of pretty red berries.

Lima (*lī′mȧ*), the county-seat of Allen County, O., is 71 miles north of Dayton, on Ottawa River. It is the center of an important oil-field, and has extensive oil-refineries, railroad and machine shops, car and locomotive works and other industries. The city has admirable public schools, and in 1893 Lima College (Lutheran) was established. Lima owns and operates its waterworks, and has the service of six railroads. Population 50,000

Lima (*lē′mȧ*), **Peru,** lies in a broad valley, six miles east of Callao, its port, with which it is connected by two railroads. The city contains over 70 church buildings, and the cathedral (rebuilt in 1746) is, after that of Mexico, the most noteworthy in Spanish America. Lima was founded in 1535 by Pizarro, the conqueror of Peru, whose remains lie in the crypt below the cathedral. Earthquakes have been frequent visitors, the most disastrous, that of 1746, destroying 5,000 out of the 60,000 inhabitants. The climate is agreeable and, on the whole, healthy, although the inhabitants are afflicted with malignant fevers at times Lima also is a department; its area is 13,310 square miles, with an estimated population of 300,000. At the city is the national university, the oldest in the Americas — that of San Marcos, which received its charter from Emperor Charles V, which is attended by 600 or 700 students. There also are a public library and a school of mines. Population 140,884. Owing to infant mortality, smallpox and drunkenness, the latter among the Indians, the population does not increase.

Lime is the oxide of the metallic element calcium (which see), and is known in chemistry as one of the alkaline earths. In a state of purity it is a white solid which does not fuse except at the enormous heat of the electric furnace; but when raised to a white heat by means of the oxyhydrogen flame it glows with a brilliant white light called the lime light, calcium light or Drummond light. Pure lime is obtained by heating pure calcium carbonate (for instance, Iceland spar) to bright redness, when carbon dioxide is expelled and lime is left. The lime of commerce, called *quicklime*, is obtained by burning limestone or marble in kilns, and is frequently somewhat impure. When water is poured on quicklime, it swells to a larger bulk, and great heat is evolved, leaving a light, white powder or a moist mass, according to the amount of water used. This powder or mass is *slaked lime* or hydrate of lime, a compound of lime with water. Slaked lime is only slightly soluble in water, but sufficiently so to make an alkaline solution known as *lime* *water.* This is used as a medicine and in testing for carbonic acid. When quicklime is exposed to the air for a long time, it takes moisture and carbon dioxide and becomes *airslaked.* Lime is used in the preparation of mortars and cements, for purifying coal-gas, in making paper-pulp and for removing hair from skins in tanning; and for many centuries it has been used to fertilize the soil. For the last purpose it is now used less than formerly. Carbonate of lime (calcium carbonate) is the most important compound containing this earth. Calcite, the purest form of which is Iceland spar, is crystallized calcium carbonate, while marble, limestone and chalk are more or less pure forms of the substance. Iceland spar is transparent and colorless, and has the power of producing double refraction of light, and hence it is used in the making of certain optical instruments. Calcium carbonate also is the chief constituent of the shells of mollusks, of most of the other shelled creatures and of the hard part of corals. Calcium carbonate dissolves in ordinary waters, since they contain carbonic acid, and from such waters are formed the stalactites and stalagmites found in caverns. The dripping water gradually evaporates and leaves a deposit of calcium carbonate in the beautiful and fantastic forms found on the roofs and floors of caves. Calcium sulphate (sulphate of lime) is another important lime-salt (see GYPSUM). Lime, as phosphate, forms the principal part of the earthy material in the bones of vertebrate (that is, backboned) animals, and it is always found in the ashes of plants. All limestones contain at least traces of magnesium carbonate, and when this is present in large proportion the rock is called dolomite or magnesian limestone. This, like limestone, is often used as a building-stone. Lime in its various combinations is almost universally diffused throughout the earth's crust and in natural waters. The compounds of lime are the chief cause of the hardness of waters.

H. L. WELLS.

Lime, a variety of *Citrus medica* known as *acida*, but the name in trade-catalogues is *limetta*. The plant is a bush or small tree from ten to twenty feet high, and is native to India, being extensively cultivated in Mexico, the West Indies and Florida. It is low, thorny and many-branched, and is tender as regards the cold. There are several horticultural varieties, including the more common sour lime and the sweet lime. The acid fruit is highly valued in tropical countries, and is used for cooling drinks and in cooking.

Lime-Light, light produced by a blowpipe flame directed against a block of pure compressed quicklime. The lime when warmed beforehand becomes brilliantly incandescent. Lime-light was used on the stage as far back as 1837–38, but was greatly improved in 1851–52, when *Azael* was produced at Drury Lane. This light has now been largely replaced by the electric arc-light.

Lim'erick, the capital of Limerick County, Ireland, stands at the head of the estuary of the Shannon, 120 miles from Dublin. The city consists of what is called English Town, the original settlement made in the reign of King John on King's Island; Irish Town, which lies immediately to the south on the left bank of the river; and Newton-Pery, south of Irish Town. Limerick has a graving and floating dock and extensive wharves, and imports grain, petroleum, wine, spirits and timber to the annual value of $3,415,000. Population 38,151.

Lime'stone, the name applied to all rocks composed wholly or chiefly of lime carbonate. Rock composed of the carbonates of lime and magnesia, though technically called *dolomite*, is often included under limestone. Limestone is widely distributed on all continents and many islands, and is found in all systems of rock, from the oldest sedimentary system to the youngest, and is forming now in many parts of the ocean. Limestone has originated in various ways. Most of it represents the accumulation of the secretions, such as shells, corals etc., of marine animals. Some of it is a chemical precipitate from solution, and a little of it is made up of fresh-water shell accumulations, formed in lakes. Limestone has no distinctive color, but buff and gray colors are common. When limestone becomes crystalline, it is marble. Limestone is often burned for lime.

Limitation of Armaments. The Washington Conference for the Limitation of Armaments was called by President Harding as an outgrowth of a suggestion by Senator Borah. The conference included the five great military powers: United States, Great Britain, France, Japan, and Italy, with China, Belgium, Holland, and Portugal also represented because of their holdings. Though France refused to consider limitation of submarines, aircraft, and army, through fear of continental disturbance, a great deal was done to lessen the armament burden and promote peace.

Among the beneficient agreements accomplished were: A fifteen-year naval holiday, with a standing ratio of strength of United States 5, Great Britain 5, Japan 3; solution of Shantung question, Japan promising restoration to China; promise by Japan (since performed) to release control of Siberian and Chinese territory; a pledge to China by all represented powers to treat her commercial concessions with a respect due to an equally great power; humanitarian agreement to prohibit use of chemicals in warfare; termination of Anglo-Japanese alliance, an alliance which had been frowned upon by the United States; acceptance by Japan of the "open door" policy with regard to China; close co-operation established between United States and Great Britain for safeguarding peace; friendly relations secured between United States and Japan by establishing equable and amicable conditions and policies with regard to the Pacific zones and islands.

Lemoges (lē′mōzh′), capital of the French department of Haute-Vienne. The staple industry is the manufacture of porcelain.

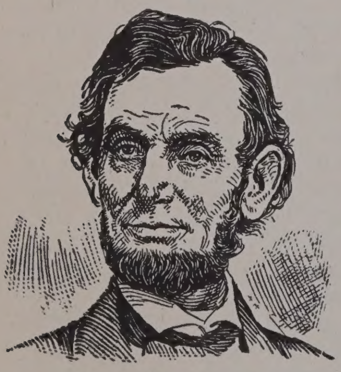
Lim pet, a mollusk with a conical shell found incrusting rocks at low tide. During high tide it wanders off to feed on algae.

Lincoln (lĭn′kŭn), English city on the Witham with important manufacturies. The horse fair held every spring is one of the largest in the world. The chief architectural glory is the magnificent Lincoln cathedral. Pop. about 60,000.

Lincoln, Ill., county seat of Logan County. It is in an agricultural section, supports varied manufactories, and is the location of Lincoln University (Pres.) Population about 15,000.

Lincoln, Neb., capital of the state and county-seat of Lancaster County. Population 60,000 Lincoln is the chief railroad center of Nebraska It has a large wholesale business in groceries and other merchandise, coal, lumber, steam and water machinery supplies and an extensive trade in agricultural implements. It is the chief center of the grain-trade of the state, and has the largest creamery establishment in the United States. Lincoln owns its waterworks. The state home for friendless children, the state penitentiary and the state asylum for the insane are located here. The city is noted for schools and colleges, constituting it one of the chief educational centers of the west. In addition to an excellent system of public schools, here are located the University of Nebraska (which see), Nebraska Wesleyan University (Methodist), Cotner University (Christian), Union college (Adventist), Lincoln Academy, St. Theresa high school and musical and business colleges.

Lincoln, Abraham. The greatest men are those whose fame cannot be wholly accounted for by their public acts. What Lincoln was is incomparably greater than anything he did. Pre-eminent as is his place in history, he conveys the idea of duty rather than of glory. In moral height and in human service he measures up to the immortals of all ages. As he looms ever larger in the perspective of time, we constantly marvel and rejoice that he does not recede to a dim, legendary figure, but grows clearer in outline, closer in human sympathy. His simple goodness — his honesty, courage, kindness, duty and love for humanity — we revere and know that we may emulate.

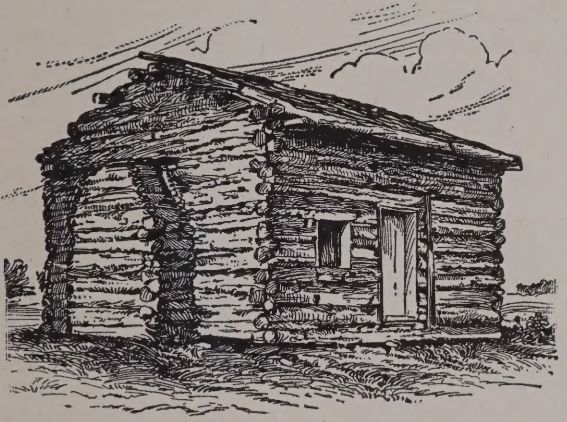


ABRAHAM LINCOLN

Nothing else that ever happened so justifies belief in the capacity of the common people for self-government, as the fact that Lincoln's great heart and brain sprang from poor, unlettered ancestry and were nourished in the sterile soil of backwoods life. Born in Hardin County, Kentucky, February 12, 1809, the pioneer era, with its comparative comforts, was just emerging from the Indian-fighting, hunting period of Daniel Boone. His log-cabin home, with its dirt floor, was but a grade better than an Indian lodge; his food and clothing were more often trophies of the chase than products of the soil. The school was nearly five miles distant, and the teacher competent to teach only reading, writing and elementary arithmetic. At 21 Lincoln possessed only six books — the *Bible*, *Pilgrim's Progress*, *Æsop's Fables*, *The Arabian Nights*, a *Life of Washington* and the *Statutes of Indiana*. He had also, from seeing an occasional Louisville or Vincennes newspaper, committed a number of Henry Clay's speeches to memory.

The conditions of life in southern Indiana, whither the family removed in 1816, were as primitive as in Kentucky. Here, on the farm near Gentryville — now Lincoln City — near the Ohio River, Lincoln's brave young mother died for lack of medical attendance in 1818. The boy of nine helped his father, a cabinet-maker by trade, to make the rude coffin in which his mother was buried. Then he wrote his first letter, one to a circuit-riding preacher, asking him to stop on his next round and say a prayer over her grave. To his mother, who urged him to "learn all he could and be of some account in the world," and to his capable stepmother, with her sympathy and insight, he owed much in the shaping of his character. Honesty, loyalty, affection, willing service and striving after every kind of good marked the 21 years he spent under his father's various roofs. For good measure he added six months to help the family establish themselves in the new home on Sangamon River, Illinois, in 1830. He helped build the cabin, cleared land for corn and split walnut rails to fence the clearing. Thirty years later some of those rails, carried into the convention at Chicago by John Hanks, his relative, helped win for him the nomination for the presidency. Little he thought of such a thing when, in the autumn of 1830, he tied his extra shirts and home-knit socks in a big cotton handkerchief and turned his face to the nearest settlement of New Salem—to begin life as a man.

He made two voyages on flatboats to New Orleans; served as captain of the Clary's Grove boys, a company of volunteers in the Black Hawk War; clerked in a store; acted as village postmaster, carrying all the mail in his hat; and learned surveying. As a trader he was a failure, but his moral, social and mental gifts made him a leader. In 1834 he was chosen by the Whigs of his district to represent them in the legislature. Self-educated, he passed the examination for admission to the bar in 1837. When Springfield became the capital of Illinois in 1839, he removed to that city, and in 1842 refused to serve further in the legislature. All his time was needed to attend to his growing practice. In 1846 he served one term in Congress, but the administration was Democratic and, as a Whig, there was little chance to distinguish himself. From 1848 to 1854 Lincoln was out of politics, but he was making a great reputation at the bar and as an orator. The passage of the Kansas-Nebraska bill of Stephen A. Douglas, Democratic senator from Illinois, alarmed the Whigs of the north to vigorous resistance against the threatened spread of slavery. Lincoln soon became the leader of the opposition in the west. He returned to the Illinois legislature, and he helped organize the new Republican party. In the first national convention of the Republicans his name was presented by the Illinois delegation as its candidate for the vice-presidency. In 1858 his fame was given a national scope by the Lincoln-Douglas debates and fight for the United States senatorship. In his speech in the Republican state convention that summer he made an observation that set the nation to thinking: "A house divided against itself cannot stand. I believe this government cannot remain permanently half-slave and half-free."



THE CABIN IN WHICH LINCOLN WAS BORN

In the seven public debates in various parts of Illinois between Lincoln and Douglas, Lincoln demoralized his opponent who had been looked upon as probably the next president. Douglas was returned to the national senate by a lessened majority, and admissions had been forced from him that killed his popularity in the south and his chances for the presidency. In the election of 1860 the Democratic vote was divided between Douglas and Breckenridge. But their united vote would not have defeated Lincoln, who had 180 votes in the electoral college against 123 for all other candidates.

Lincoln was not pledged to abolish slavery, only to preserve the Union and to prevent the spread of slavery. Even after the war began, the government offered to purchase the freedom of slaves in the slave-states that remained loyal — Kentucky, West Virginia and Missouri. But the secession movement began as soon as Lincoln's election in November, 1860, was assured. When his inauguration took place on March 4, 1861, seven states had seceded. In his inaugural address he declared that the Federal government would not assail the rebellious states, but that it would "defend, protect and preserve if attacked." A month later Fort Sumter was bombarded and captured by the Confederate government. The president mobilized the regular army and issued a call for volunteers. Within a month all the states had arrayed themselves on one side or the other, and the four years' Civil War was begun. The conduct and results of this war are set forth in every school-history. Separate sketches of the commanders who distinguished themselves are to be found in this reference-work. (See Grant, Sherman, Farragut, Thomas and Lee.) Lincoln's part was to guide the ship of state through the troubled waters of civil war. For two years he kept consistently to the task of preserving the Union. On Jan. 1, 1863, he issued the emancipation proclamation, and from that on the prosecution of the war had the added purpose of freeing the slave. Never has the world seen a greater example of wisdom, patience, patriotism and moral courage than animated his every act. The battle of Gettysburg was fought in July, 1863. In the following November the battlefield was dedicated as a national cemetery. Lincoln's brief speech on that occasion will ever remain one of the greatest speeches ever uttered, both for its lofty sentiment and for its matchless literary style:

> Fourscore and seven years ago our fathers brought forth on this continent a new nation, conceived in liberty and dedicated to the proposition that all men are created equal. Now we are engaged in a civil war, testing whether that nation, or any nation so conceived and dedicated, can long endure. We have met on a great battlefield of that war. We are met to dedicate a portion of that field as the final resting place of the men who here gave their lives that that nation might live. It is altogether fitting and proper that we should do this

> But in a larger sense we cannot consecrate, we cannot hallow, this ground. The brave men, living and dead, who struggled here have consecrated it far above our power to add or detract. The world will little note, nor long remember, what we say here, but it can never forget what they did here. It is for us, the living, rather to be dedicated to the unfinished work which they who fought here have thus far so nobly carried on. It is rather for us to be here dedicated to the task remaining before us: that from these honored dead we take increased devotion to the cause for which they gave the last full measure of devotion: that we here highly resolve that these dead shall not have died in vain: that the nation shall, under God, have a new birth of freedom, and that government of the people by the people and for the people shall not perish from the earth.

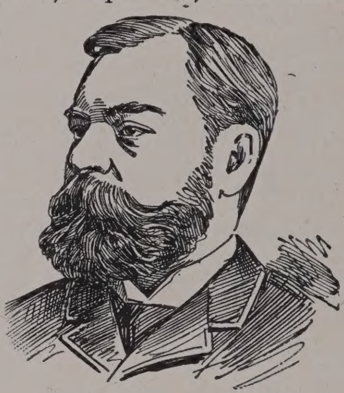
It is said that this immortal speech was so quietly uttered, so unexpectedly brief, that those who heard it did not realize their privilege until they saw it in print. Then it was understood that in its pilot this country had one of the greatest heroes of all time. Love, reverence and gratitude were in the votes by which he was re-elected in 1864. In his second inaugural address, delivered six weeks before he was assassinated, he set forth the moral significance of the conflict, then drawing to a close, and declared that the task would be finished "with malice toward none, with charity for all." On April 14, five days after Lee's surrender, President Lincoln was shot by J. Wilkes Booth at Ford's Theater, Washington. He died the next morning without recovering consciousness. The nation hopes never again to see such a pageant of mourning as marked the progress of his funeral train to Springfield, Illinois, where he was laid away in the sweet, spring weather. A noble monument marks his resting place. On the 100th anniversary of his birth, Feb. 12, 1909, the Lincoln Farm Association dedicated a memorial museum, erected at a cost of $250,000 on the site of his birth. The weatherworn log-cabin is to be reverently preserved within a marble temple.

In statue, bust and portrait we have all been made familiar with Lincoln's tall, spare figure, strong features, heavy, black hair and deep-set, gray eyes. We are equally familiar with his simple, friendly manner, his humor, his illuminating anecdotes, his tolerance and the wistful expression he often wore as if he had missed his meed of happiness. In speech he was plain and forcible, often dramatic; in mind he had quick perception, logical analysis, sagacity, a tenacious memory, intuitive knowledge of character and broad-minded philosophy. He had the brain of a sage, the foresight of a prophet, the inflexible purpose of the historic reformers and the tender heart of a mother. He is our country's most poignant and admonishing memory. It rests with us to breed such wise, gentle and consecrated souls that this nation which he lived and died to save may deserve not to perish from the earth.

Hay and Nicolay's *Life of Abraham Lincoln*, in 10 volumes, is encyclopedic in information. The biography written by Ida M. Tarbell, in four volumes, is philosophical and contains much new material. William E. Curtis' history is in one volume. Every library contains a collection of Lincolniana, covering every phase of his life.

ELEANOR ATKINSON.

Lincoln, Benjamin, an American Revolutionary general, was born at Hingham, Mass., Jan. 24, 1733. At the outbreak of the Revolution he was a major-general of militia. In 1775 he cleared Boston Harbor of British. In 1776 he reinforced Washington, and in 1777 Washington had him appointed a major-general in the regular army. In 1778 he commanded the American army in the south. In 1780 he was besieged in Charleston, and captured by the British. In 1781 he fought at Yorktown, and was deputed by Washington to receive Cornwallis' sword. He died on May 9, 1810.



ROBERT T. LINCOLN

Lincoln, Robert Todd, ex-secretary of war, diplomat, and eldest son of Abraham Lincoln, was born at Springfield, Ill., Aug. 1, 1843. He graduated at Harvard in 1864, and in 1867 began the practice of law at Chicago, where he built up a large professional business. When Garfield became president in 1881, Lincoln was called into his cabinet as secretary of war, serving until 1885. In 1889 he was appointed United States minister to England and held this position until 1893, when he returned to his law-practice in Chicago. Though never seeking office, he has filled the high positions to which he has been called with credit to himself and honor to his country. After Mr. Pullman's death, he acted as president of the Pullman company, but in 1911 resigned to become chairman of the company's directors. His death occurred in 1926.

Lind, Jenny, the "Swedish Nightingale," was born at Stockholm, Oct. 6, 1821, of humble parentage. Her musical gifts early attracted the attention of Mme. Lundberg, a retired actress, through whose influence she was admitted into Stockholm Musical Conservatory at the age of nine. She sang before local audiences with great success, and at 16 appeared as *Agatha* in Weber's *Der Freischutz*. She made her debut in London in 1847, in *Robert le Diable*, producing a sensation without a parallel in England's operatic history. She visited London again in 1849, and won a most brilliant triumph. In 1850 she made a tour through the United States and Canada, singing in all the principal cities. The receipts were over $600,000, half of which was received by Jenny Lind. While in America she married Otto Goldschmidt, who had accompanied her as a pianist. They returned to Europe in 1852. After she had visited Stockholm and expended $200,000 in her native country, they took up their residence at Dresden. In 1858 they removed to England, where they continued to reside. She only occasionally appeared in public, singing solely for charitable purposes. Her charities amounted to many thousand dollars. She died at Malvern, England, November 2, 1887.

Lindbergh, Charles Augustus, a celebrated American aviator, was born at Detroit, Michigan, on February 4, 1902. He saw his first airplane at Washington, D. C., in 1912, his father being a Representative in Congress from Minnesota at that time. He graduated from high school at Little Falls, Minnesota, and took up a course in mechanical engineering at the University of Wisconsin. In 1922, however, in the midst of his sophomore year he decided to take a course in aviation. He left the University and enrolled with the Nebraska Aircraft Corporation at Lincoln, Nebraska. A year later he bought his first airplane, a wartime training plane, at a government auction held in Americus, Georgia. He had never made a solo flight, but his natural aptitude made his success assured from the start.

Col. Charles A. Lindbergh

In the summer of 1923, Lindbergh applied for admittance to the Army Air Service Training School, and became a flying cadet at Brooks Field, San Antonio, Texas. Out of a starting class of 104, he was one of eighteen to graduate and receive their "wings," in the Spring of 1925. He was employed as chief pilot with the Robinson Aircraft Corporation at St. Louis in the Autumn of 1925, and in this capacity was the first to fly the airmail from Chicago to St. Louis. He also joined the Missouri National Guard and was soon commissioned a first lieutenant. While flying the mail one night in the Autumn of 1926, Lindbergh gave serious thought to the feasibility of a non-stop flight from New York City to Paris. He gained the support of a group of St. Louis business men and arrangements were made A special plane was built under his direction by the Ryan Airlines of San Diego, California, and was christened the *Spirit of St. Louis.* On May 11, 1927, he took off from San Diego in this plane, stopped twenty-five minutes at St. Louis, and landed at Curtiss Field, Long Island, on the following day, his flying time having been twenty-one hours and twenty minutes. On May 20 he took off alone on his epochal trans-Atlantic flight from Roosevelt Field, New York, and arrived at Le Bourget Field, Paris, thirty-three and one-half hours later, having covered an estimated distance of 3,600 miles.

Upon his return to the United States he made an air tour to seventy-five cities in the *Spirit of St. Louis.* Upon the invitation of President Calles of Mexico, he made a non-stop flight from Washington to the City of Mexico, a distance of 2,100 miles, in twenty-seven hours and ten minutes. He later visited Central and South America and the West Indies on his famous "good will" tour. He then presented the *Spirit of St. Louis* to the Smithsonian Institution, Washington.

In 1929, Lindbergh was married to Miss Anne Morrow, the daughter of Dwight Morrow, at that time U. S. Ambassador to Mexico. He continued his interest in aviation and was employed as technical adviser by large aviation interests. He took his wife with him on many of his flights, and in 1931 the couple made a flight to the Orient.

The kidnapping and murder of the Lindbergh's twenty-month-old-son son, Charles Augustus, Jr., in the Spring of 1932, was a terrible tragedy. A second son, Jon Morrow Lindbergh, was born to Col. and Mrs. Lindbergh later in the year.

In 1933 Mr. and Mrs. Lindbergh made a remarkable flight of some 28,000 miles. They covered four continents in five months. They returned home in December, 1933, after having crossed the Atlantic twice by airplane and having visited thirty nations.

Lindsey, Benjamin Barr, American jurist and reformer, was born at Jackson, Tennessee, in 1869. He became noted for his work with children while serving as judge of the Probate Court in Denver, Colorado. This led to his becoming judge of the Juvenile Court, the fame of which spread throughout the world. He remained in this position until July 1, 1927. Judge Lindsey was active in the formation of the Progressive Party, and was a member of its national committee in 1912. He lectured extensively, and in later years lent his support to the idea of "companionate marriage." Among his writing are *The House of Youth* (1925), and *The House of Human Welfare: The Companionate Marriage* (1927).

See Juvenile Court.

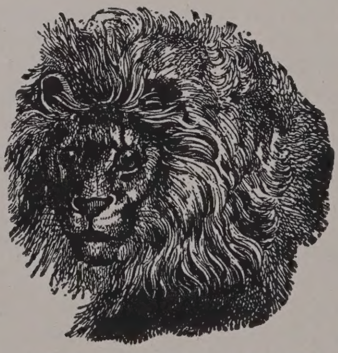
Linen, a fabric made of the threads of flax wrought by both ancients and moderns. There are frequent references to linen in the Bible and other ancient records, and mummy cloths of great age and fine texture have been found in Egypt. The ancient Egyptians not only used the fabric extensively themselves, but exported large quantities. The cultivation of flax was considerable in Italy just before the Christian era; and it is probable that it was first introduced into England by the Romans. The year 1787 marks the first introduction of a mill for spinning linen-yarn by machinery in the United Kingdom; and it was not until 1812 that the first mill which had any real success was built in London. It is doubtful, however, whether the linen now manufactured is superior to that of the ancient Egyptians, as some of the mummy-cloths in the British Museum contain more than 200 threads to the inch in the warp and over 100 in the woof. The countries in which the manufacture of linen is most extensive are Great Britain, Belgium and France. A large mill was built for the purpose at Fall River, Mass., in 1834; but the industry has not become an extensive one, as most of our linen goods are imported from other countries.

Lines of Force, a term introduced by Faraday, to describe an electric or magnetic field of force. The region about an electric charge or a magnet is such that one has to do work to move another electric charge or a magnet pole respectively. Such a region is called a *field of force.* This field of force will be completely described when, at every point in the region, the direction and amount of the force on unit charge is given. Faraday accomplishes this description by imagining the region filled with lines such that at every point they have a *direction* the same as that of the force, and are drawn so thickly (*i. e.*, so close together), that the number of lines passing through unit area, perpendicular to the direction of the force at any point, is numerically equal to the *amount* of the force. Lines drawn in this manner are called *lines of force.* In a magnetic field lines of force may be defined in direction by saying that they are lines such that at every point they have a direction the same as that which a freely-suspended compass-needle would assume at that point. Faraday showed that lines of force, whether lines of electric force or lines of magnetic force, behave *as if* there were a tension along the lines of force and a repulsion between them. The introduction of lines of force has simplified many problems in electricity and magnetism, notably the theory of induced currents. See ELECTRICITY and MAGNETISM.

Linnæus (*lĭn-nē′ŭs*), **Carl,** a distinguished botanist, was born in Sweden, May 13, 1707. Almost as soon as he could talk, he knew the names of the plants in his father's garden and of those of the neighborhood. In 1730 he was appointed assistant to the professor of botany at Upsala. His first work was an account of the botanical results of an extended trip through Swedish Lapland. While arranging the gardens and greenhouses of a Dutch banker in Amsterdam he went to England at his patron's expense, and published some of his most famous works, including his *Natural System* and the *Genera of Plants*, in which he introduces his system for arranging plants in classes, which, though based on an artificial distinction, was in use for many years While Linnæus taught botany in the university, his fame and his lectures increased the students from 500 to 1,500. He published several other botanical works and sketches of his scientific excursions. He died at Upsala, Sweden, Jan. 10, 1778. The Linnæan Society of London now owns his books, manuscripts and botanical collection. See *Through the Fields with Linnæus* by Caddy.

Lin′otype, a machine sometimes known as the Mergenthaler, is employed to cast solid lines out of the type which has been set up. This invention is now universally employed by newspapers and in not a few books. The machine was invented in 1884 by Ottmar Mergenthaler. The solid metal bar, with raised letters, which is made by the linotype, is simply melted down when done with, so that a great expenditure of time and labor in "distributing" the type is entirely avoided.

Lin′seed Oil, the oil made of seed of flax. The seed is first bruised, then ground, and afterward with powerful machinery the oil is pressed out. Sometimes the crushed mass is steamed before the pressure is applied, but the cold-pressed oil is regarded as the better oil, as it is less liable to become rancid than the steam-pressed. The oil is chiefly used in the manufacture of varnishes and paints. The oil-cake,— seed ground after the oil has been pressed out,— is good for poultry and cattle.

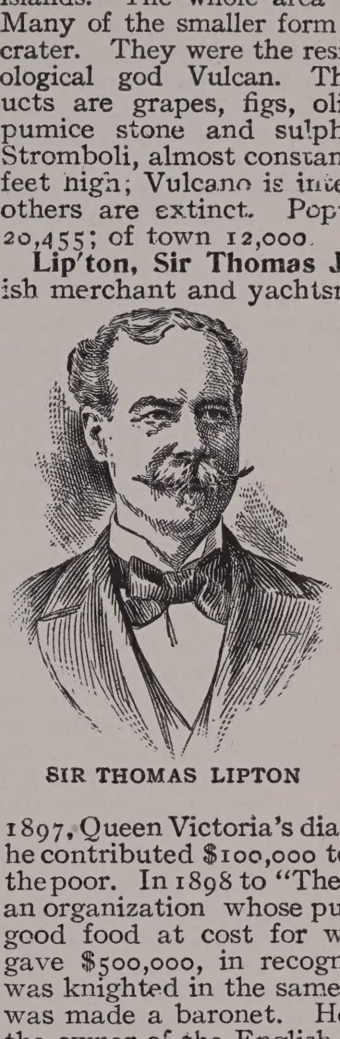


HEAD OF GAMBIAN LION

Li′on, a very large member of the cat family, inhabiting Africa and southern Asia. The copious mane of long, shaggy hair surrounding the head and neck of the male gives it an appearance of great size. Nevertheless, the lion is exceeded in size and weight by the largest tigers. A full-grown male is about nine and one half or ten feet long without the tail, while the Royal tiger may reach a length of 11 feet. Lions vary in color and in the size of the mane. As a rule, they are tawny or yellowish brown, with the mane darker, but the lioness is not provided with a mane. The tail is long and has a tuft of black hair at the end. Lions are very hard to distinguish by sight, the tawny mane being so like the tall yellow grasses they hide amongst. They live on the plains, rather than in the forests, finding concealment in dense jungle. The young are born and receive their first care in some deeply-secluded spot; there usually are two at a birth. The parents, especially the mother, look after the kittens carefully until they are able to take care of themselves, male, female and young keeping together. The old ones teach the young how to capture and kill, and when they start forth for themselves they are daring and dangerous. The kittens at first present a brindled appearance. the stripes and spots indistinct. Maturity is not reached until the eighth year. The span of life may reach 40 years. In reputation for ferocity the lioness fully rivals the male, and when protecting her cubs is said to be quicker, more excitable and savage than her mate. The lion is a lazy beast and a glutton. The picture is a false one that describes him as feeding only on what he himself has slain. He will devour any meat he may happen on. the remains of another's catch as well as fresh prey of his own. It is lions' custom to hunt in bands; they have been seen in companies of five, six and ten. As a rule a lion hunts from ambush, creeping from cover to cover until within leaping distance of the prey. In hunting he places his mouth close to the ground and utters his terrifying roar, which, creating panic among the lesser animals, sends them scurrying forth in mad confusion. It is said that the natives can tell by this roar whether the lion is hungry or full, and judge thereby of his measure of ferocity. In speed he is no match for the swift antelope, but captures great numbers of these animals by creeping upon them unexpectedly, keeping well to the leeward, that his strong odor shall not betray him. Zebras and wild asses are frequent victims, and domestic creatures suffer from the attack of the great cat, who finds stockade and fence no bar to his hunting. The camel and giraffe he attacks, but not the elephant. Lions usually rest by day and hunt by night, though a company may start forth on a cloudy day. Maneating lions boldly enter villages, and snatch a victim from hut or from under blanket by the fire. Male lions engage in terrible combats among themselves, duels to the death being fought by rivals for the favor of a female. Elephants are trained for the sport of lion-hunting, but most hunting is now done on foot. In Africa sportsmen sometimes ride to the hunt on horses, but care has to be taken not to get too close, as, for a short distance, the lion can make great speed. In character the lion is cautious; shows much intelligence in avoidance of danger; is keen and crafty; and, though recently it has become the fashion to decry his bravery and name him coward, there are too many well-authenticated stories bearing witness to his courage. He may have been known to slink away, but probably lived only to fight another day, to fight magnificently, indomitably — truly "king of beasts." Man is his only enemy. See Selous. *A Hunter's Wanderings in Africa* and Porter's *Wild Beasts.*

Lions, American. See PUMA.

Lipari (*lip'ȧ-rē*) **Islands,** also called **Aeolian Islands,** a volcanic group in the Mediterranean off the northern coast of Sicily. It consists of six large and numerous smaller islands. The whole area is 50 square miles. Many of the smaller form the ring of a large crater. They were the residence of the mythological god Vulcan. The principal products are grapes, figs, olives, wine, borax, pumice stone and sulphur. The volcano Stromboli, almost constantly active, is 3,022 feet high; Vulcano is intermittent; and the others are extinct. Population of islands 20,455; of town 12,000.


SIR THOMAS LIPTON

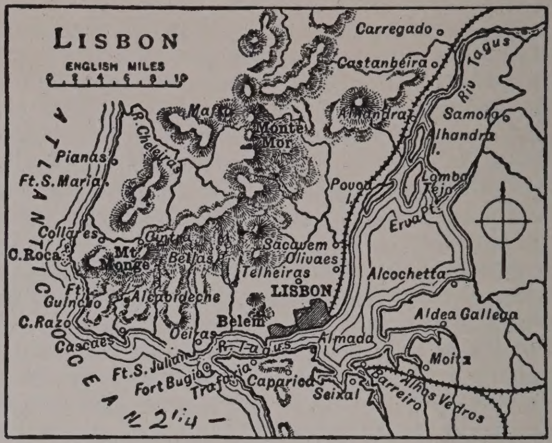
Lip'ton, Sir Thomas Johnstone, a British merchant and yachtsman, born in Glasgow, Scotland, of Irish parents. He organized the "Lipton, Limited," a commercial establishment capitalized at $200,000,000, with tea, coffee and cocoa estates in India and Ceylon, fruit-orchards in Kent and elsewhere and a refrigerator-car plant in the United States. He was, too, president of a pork-packing company in Chicago. In 1897, Queen Victoria's diamond-jubilee year, he contributed $100,000 to a dinner-fund for the poor. In 1898 to "The Alexandra Trust," an organization whose purpose is to provide good food at cost for working people, he gave $500,000, in recognition of which he was knighted in the same year. In 1902 he was made a baronet. He is best known as the owner of the English yachts which were defeated in contests for the America's cup, the latest of which occurred in 1920.

Liqueur (*lē'kẽr'*). This name is given to the numerous preparations of alcohol, which are flavored or perfumed and sweetened to be more agreeable to the taste. Clove cordial, aniseed cordial and peppermint are examples. Maraschino is a variety distilled from bruised cherries, and Noyau is flavored with bitter almonds.

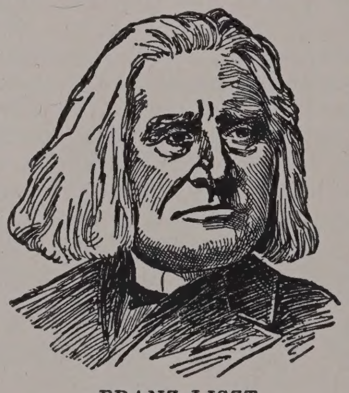
Liquid Air. When gases are sufficiently cooled, they may be liquefied, as, when liquids are sufficiently cooled, they become solidified. Liquid air is the name given to the liquid which is obtained by turning the air as a whole into the liquid state; but in 1884 it was found that this liquid practically resolved itself into two distinct liquids, the oxygen fluid and the nitrogen. The "carbonic acid' becomes a solid; and gives a turbid appearance to the liquid air, although, when strained through a filter of paper, it becomes quite clear and practically colorless. Liquid air boils at a temperature of –191° C. or –312° F. Nitrogen boils at a slightly lower temperature than oxygen, –194° instead of –183° C., so that, if liquid air be poured upon water, it at first floats, but gradually sinks, as the nitrogen evaporates first and leaves only the heavier oxygen behind. The liquid oxygen has a blue color. This property of liquid air, that it becomes more and more purely liquid oxygen, enables many beautiful experiments to be made with it. A steel watchspring burns beautifully in it for this reason, sending forth showers of sparks. Liquid air may also be used as an explosive, as it can exert a pressure during evaporation of something like 10,000 pounds to the square inch. At the present time the process of manufacturing liquid air can hardly be said to be upon a commercial basis; yet many uses of the substance may be conceived, as power, as an explosive, as a means of extracting oxygen from the atmosphere and as a refrigerating agent. It, therefore, is not fair to regard liquid air as no more than a scientific plaything.

Liq′uorice, a class of plants having long, pliant, sweet roots. It has stems about four feet high, feather-shaped leaves and clusters of light-violet flowers. The Greek name means sweet root, and the name liquorice is a corruption of it. The plant is propagated by slips; and after a plantation has been made almost three years must elapse before the roots can be dug up for use. Liquorice requires a deep, rich, loose soil. The roots grow downward more than a yard, and the straight taproots are most valuable. It is a native of the south of Europe and some parts of Asia. Stick-liquorice is made by crushing and grinding the roots to a pulp, which is boiled over an open fire. After straining, it is evaporated in copper pans until it is thick enough to be rolled out into sticks when cooled. Liquorice has been a well-known medicine since ancient times. It is useful in catarrh and in throat troubles.

Lis′bon, the capital of Portugal, stands on the Tagus, nine miles from its mouth, on a site surpassed for imposing beauty in Europe only by Naples and Constantinople. The city consists of an old and a new part. The old part is the one that escaped the earthquake of 1755, and is still known by its old Moorish name of *Alfama.* Water is brought by a magnificent aqueduct, built in 1738, which, though it crosses a valley on 35 arches, stood the shock of the great earthquake. Lisbon has one of the finest harbors in the world, which is protected by a series of forts. The manufactures are gold and silver ware, jewelry, cotton and silk goods, hemp, hats, boots and tobacco; and it exports wine, cork, fish, cattle, oil, salt and fruit. Lisbon passed through the hands of Romans, Goths and Moors, the last holding it 400 years (716–1147), until Alphonso I of Portugal, with the help of crusaders, conquered it. In 1422 it was made the capital. In 1580 the "invincible" Armada set sail from its harbor. The city was retaken by Portugal in 1640. It suffered from an earthquake in 1755, which in less than ten minutes laid the greater part of the city in ruins and killed nearly 40,000 persons, it being one of the greatest earthquakes on record. At Lisbon the government maintains a higher technical school, a polytechnic school, a school of agriculture and a military school; there also are conservatories for music and dramatic art. The University of Coimbra has its seat here. Population 356,009.



Liszt (*lĭst*), **Franz,** pianist and composer, was born at Raiding in Hungary, Oct. 22, 1811. At nine he appeared to such advantage when playing in public that several Hungarian nobles offered the means to obtain a musical education, and the boy was sent to Vienna. At the close of a memorable concert, April 3, 1823, Liszt being not yet 12, Beethoven ascended the platform and kissed him. After the death of his father, in 1827, great mental depression fell upon him. He was repelled by the low estate of music and musicians, and with strong religious feelings he was drawn to the church; but in 1831 he heard Paganini the violinist, and was fired with the resolve to equal him on the piano. At the height of his popularity as a performer, he retired to Weimar to direct the opera and devote his time to composition and teaching. In 1865 he received minor orders in the Church of Rome, and was afterwards known as Abbé. He was the


FRANZ LISZT

foremost figure of his time in the musical world. As a pianist he simply was unapproachable, and as a teacher he also was unrivaled. His compositions are numerous and original. His generosity was more than princely, all the enormous proceeds of his concerts after 1848 being devoted to the benefit of others. He died at Baireuth, Bavaria, July 31, 1886. See *Life* by Nohl and Martin.

Literature.

Chinese Literature

How vast is the literature of China can be seen from the catalogue of works ordered to be collected by the government, in 1722, to be printed as a national library. This catalogue has 200 chapters. The Chinese classics are the books of Confucius and a few others. The histories of this great national library are those of China itself. What are called the dynastic histories give an account of each reign, followed by treatises on chronology, rites, music, law, food, property, state-sacrifices, astronomy, the five elements, geography and a list of the books of the reign. To these treatises is added a host of biographies of the leading men of the reign. There also are subdivisions of the histories, among which are chapters on *Books on the Constitution*, including such works as Ma Twin-lin's *General Examination of Records and Scholars*, said to be a library in itself. The philosophy and arts division of the library is made up of works on war, legislation, farming, horticulture, the mulberry tree, medicine, astronomy, mathematics, divination, music, engraving, the tea-plant, ink, the works of Roman Catholic missionaries, Taoism and Buddhism. The *belles lettres* division is made up of poetry and critical works. Chinese poetry is rich in ballads, songs, elegies and inscriptions for monuments. Its poets have been without number, many of them being women. One of the Confucian classics is *The Book of Poetry*, and poetry was one of the regular subjects in the former government examinations which were abolished on Sept. 3, 1905. Novels and dramas are not thought important enough to be put in the national library; but some of their historical romances are works of genius, as the *Expanded Narrative of the Period of the Three Kingdoms*, written in the 13th century of our era. Some of their best novels have been translated into English and French, as *The Rambles of the Chang-Teh Emperor in Kiang-nan*. Great as is this literature, it would have been greater, had it not been for the burning of the Confucian books by the founder of the Tsin dynasty, who wished all that came after him to think that he was the founder of China. One library, too, after another was burned or destroyed down to the middle of our 6th century. Paper was used for writing in the 1st Christian century, and printing on wooden blocks soon followed. Movable types were invented by a blacksmith, Pi Shing, in the 10th century.

Sanskrit Literature

The most important Hindu writings are religious. The famous Vedic hymns are found in four collections: the *Rig-Veda*, the largest; *Sâma-Veda*, verses that seem to be selected from the hymns of the *Rig-Veda; Yajur-Veda*, verses to be recited at sacrifices; and the *Black Veda*, apparently a continuation of the *Rig-Veda*. The two great Hindu epics are the *Mahâbhârata*, which tells of the feuds between two kingly races, and the *Râmâyana*, which describes the heroic deeds of Râma, a prince of Oude who conquered Ceylon and the Deccan. Râma is represented as the embodiment of Vishnu. What are known as the *Purânas* are continuations of these two epics, though written much later. Other epics were the *Birth of the War-God* and the *Race of Raghu*, by Kalidasa, who also wrote lyrics, as *The Cloud-Messenger*. Another lyric poet was Jayadeva, whose *Gita-Govinda* sings of the love-adventures of the god Krishna. Indian fables have found their way all over the world. The earliest collection is known as the *Panchatantra*. No nation, except Greece, founded independently a better drama than that of the Hindus. Among their best plays are the *Toy-Cart* of Sudraka and the plays of Kalidasa. Besides the well-known laws of Manu, there is a large mass of Brahmanical treatises and Buddhist Sanskrit literature.

Babylonian Literature

The Babylonians in some respects were a literary people. Inscriptions are found as early as 2000 B. C., written by private persons, which show that a certain amount of education was required of every Babylonian. The writings were on tablets, kept in the temple-libraries of the different cities. In the sacred city of Ea were written most of the tablets on magic. The epic poem of *Gizdhubar* was composed at Erech, the oldest capital of the land. The poem, which relates the attack of the seven evil spirits on the moon, was written probably at Ur. Perhaps the finest work in Babylonian literature is the poem describing the war in heaven between Merodach and the demon Tiamat, which is in the library at Borsippa. The tablet, after telling the story graphically and beautifully, closes with a remarkable hymn of praise to the victor. In these libraries are found poems, fables, proverbs, works on law, geography, astronomy, magic, histories and mythologies.

Assyrian Literature

One of the most important results of Assyrian explorations has been the discovery in the palace of Asur-bani-pal, at

Nineveh, of a library of many thousand tablets. This library was undoubtedly founded to enable Assyrian boys to be taught at home, rather than be forced to go to Babylon, where they might become estranged from the government of Nineveh. One section is made up of text-books — tables of square and cube roots, lists of plants, metals and animals and lists of countries, with their noted products. The most interesting section is that of poetic and legendary literature. Here are found the poetic legends concerning the great Chaldean hero Gizdhubar or Izdubar, and among them a story of the flood, much like the Bible story of Noah. There also are stories of the creation, remarkably like the account in Genesis. Most of these tablets were written during the reign of Asur-bani-pal (669 to about 640 B. C.).

PHŒNICIAN LITERATURE

The Phœnicians were once thought to have invented letters, but it is now known that the hieroglyphics of the Egyptians, several of the cuneiform alphabets and the script of the Hittites are older. The Phœnicians, however, were a business people. They wished to be able to write rapidly, and so made simple one of the alphabets then known. This they did so well that it has outlived all other systems, and is the one in use to-day among all civilized nations, who have each adopted it with but slight changes. The Phœnicians had no real literature so long as they remained a nation. However, books were written by those of them who settled in Africa. The *Periplus* of Hanno is an interesting book of travels, and valuable works on history and geography are said to have been written by Mago, Hamilcar and others.

PERSIAN LITERATURE

The famous *Zend-Avesta* is the name given to the sacred books of the Parsees, Avesta meaning text and Zend commentary. What now survives is but a fragment of what once existed of this literature. At the head stand the *Gathas* (900 or 1200 B. C.), probably the work of Zoroaster and his disciples. These are sacred prayers, songs and hymns. The names of other parts of the collection are *Yasna*, *Visparad*, *Vendidad*. The last part of the *Vendidad* was written as late as 500 B. C. For a while after the Mohammedan conquest (A. D. 642), the writers one and all were Moslems. But by the 9th century not only were the leaders of thought Persians, but the native language had again come into use. For five centuries the literary life flourished. The chief poets of the 11th century were Ausari (1039), author of *Wamik and Asra;* Ferruchi, Esedi and, above all, Firdausi, who wrote the Persian national epic, *Shah-Nameh.* Later came the famous Omar Khayyam (who died in 1123), Farid-ed-Din Attar, the author of *Pend-Nameh* (Book of Council), a work containing the lives of the saints, and a third greater poet, Jelal-ed-Din Rumi, whose chief poem was on *Contemplative Life.* In the 13th century, also, wrote Sádi, the first and greatest didactic poet. But far above all shines Hafiz (whom see), who sang of wine and love, of nightingales and flowers. With him Persian poetry reaches its height. Persia abounds in tales, stories and novels, but valuable history has also been written. In early times Reshid-ed-Din produced his history of all Mohammedan countries. Foremost among modern historians is Meikhond. Ferichtah (1640) wrote in Persian a history of India of high value. For a popular survey of this subject see E. A. Reed's *Persian Literature.*

JEWISH LITERATURE

The great product of early Jewish literature is the Bible (which see). In the period from 143 B. C. to 135 A. D. the *Midrash*, or inquiry into the meaning of the sacred writings, was divided into *Halacha*, practical teachings, and *Hagada*, religious and historical teachings. To this period belong *The History of the Jewish War* by Josephus (which kept its place as an authority on this event until lately) and the philosophical works of Philo. At this time, moreover, were composed the early Christian writings and the Apocrypha, or religious books by Jewish authors not included in the Protestant Bible. The period from 135 to 475 A. D. is noted mainly for the achievement of the scholars who worked on the *Mishna*, the oral law, made up of early traditions as to the meaning of the Mosaic law, and the *Talmud*, containing the *Mishna* when it had been reduced to writing, together with a commentary on it. During this period the Jews gave up the use of their own language for that of whatever country they happened to dwell in. Throughout the middle ages, especially in Spain, there were many Jews of the highest scholarship, but little real literature was produced. But one name of importance stands out from the rest, that of Maimonides, who was born at Cordova and spent part of his life there, but was forced to leave the country and settle in Egypt. He was the first of modern commentators on the Bible, and by his works, the greatest of which is *Guide of the Erring*, had so potent an influence on the growth of Judaism that he has often been placed next to Moses. In the 13th century the poet Jehuda Charisi wrote in Spain. The period from 1492 to 1755 is marked by the appearance of many Jewish scholars, foremost among whom was Spinoza. In modern times, under the leadership of Moses Mendelssohn, Jews have taken a prominent rank in literature, science and public life. Among them are Neander, Heine, Auerbach, Karl Marx, Lassalle, D'Israeli, Halévy, Mendelssohn, Meyerbeer, Rubinstein, Grisi, Rachel, Montefiore, Rothschild, Belmont and Hirsch.

EGYPTIAN LITERATURE

This seems to have had no gradual growth, like that of other countries. The most important part of it is religious. *The Book of the Dead* tells of the adventures of the soul after death. A copy of this book was placed in the coffin with the dead. The main part of the book was written not later than 3000 B. C. There also are books on the gods, hymns to the sun, proverbs and treatises on moral philosophy. Writings on magic are many. The Egyptian works on medicine show that this science was known long before 3000 B. C. We also find scientific works and many letters. We have two stories, *The Two Brothers*, written by the scribe Euna about the time of the Exodus, and *The Romance of Setna*, written in the 2d or 3d century B. C. The epic of Pentaur, the subject of which is the deeds of Rameses II, has been called the Egyptian Iliad.

GREEK LITERATURE

The two Homeric poems, the *Iliad* and the *Odyssey*, form the earliest Greek literature which has come down to us. But they are not at all like the simple ballad poetry of other countries. They are works of highly-finished art, which could not possibly have been created till poetry had flourished for a long time. These poems are epics; the name epic being given first to verses which were spoken, while lyric verses were sung, and then to the chief kind of poetry which was thus merely recited, not sung, namely, narrative poetry in hexameter verse. Hexameter verse is known to English readers by Longfellow's *Evangeline*. The *Iliad* means the poem of Ilium or Troy, a city of Mysia in the northwest of Asia Minor. Its subject is events in the ten years' siege of Troy by the Greeks. Its hero is Achilles, while that of the *Odyssey* is Odysseus, one of the Greek leaders at Troy, whose adventures on the homeward voyage are related. Long as these epics are, they were composed to be spoken, and were not written out till years afterward. This is true of classical Greek literature in general. Lyrics were songs sung at banquets; Herodotus, the Father of History, probably recited his accounts at the festival of the Olympian games; and Socrates, the first philosopher, never wrote a word. The *Iliad* and the *Odyssey* are said to be the work of Homer; but nothing certain is known concerning the poet or whether they are the work of any *one* man. In Bœotia epics were written by Hesiod, whose chief works are *Theogony* and *Works and Days*.

Lyrics were composed by Archilochus, Sappho, Alcman and many others, but the greatest lyric poet was Pindar. Of his many compositions we have odes written in praise of victorious heroes at the festival games.

Epics had been recited, evening after evening, to the family and retainers of the early chieftain at his home; lyrics had been sung at the feasts of the rich; but the drama was the outcome of a wish to reach a larger audience, the great democracy of Athens. It maintained the features of the epic, the audience being told what was supposed to take place behind the scenes, while the chorus was borrowed from the lyric. Though plays and playwrights were many, to us Æschylus, Sophocles and Euripides in tragedy and Aristophanes and Menander in comedy make the classical Greek drama.

The first historian of prominence was Herodotus of Halicarnassus, whose accounts of his travels in Asia Minor, Persia and other countries are one of the main sources of our knowledge of their early history. A far more painstaking and able historian was Thucydides, whose work on the Peloponnesian War has never been surpassed. Xenophon's writings were valuable, but are not equal to those of Thucydides.

Of the three great Greek philosophers, Socrates is known to us only through the reports of Plato and others. Plato's *Dialogues* are masterpieces of literary genius, while his philosophy has had the greatest influence on all thinkers since; as has also that of the more practical Aristotle, who wrote on logic, rhetoric, physics, metaphysics, natural history and politics.

Another department of literature in which the Greeks excelled was oratory. In Athens oratory was a regular business, as a suitor was compelled to speak in his own behalf and usually had a speech-writer compose a speech for him to learn and deliver as his own. For example, Lysias composed the greater part of his speeches, which are noted for their style, for his clients. Among them is the speech *Against Agoratus*. Antiphon's best speech, perhaps, is that *On the Murder of Herodes*. The greatest of all Athenian orators, however, was the statesman Demosthenes. His orations *On the Crown* and *On the Peace* and his *Philippics*, speeches against Philip of Macedon, are noteworthy examples.

The death of Alexander closes classical Greek literature. When political liberty ended, there ceased to be a great public which called forth an author's best efforts, and hence great works were no longer written. Without a great public, no great artist arises. Still, there were a few later writers who added luster to the times in which they lived, such as Theophrastus, the philosopher Theocritus, the poet Menander, who wrote good comedies, and Plutarch, the author of the famous *Lives*. See Jebb's *Primer of Greek Literature*.

ROMAN LITERATURE

Of literature ,properly so called, there was nothing in Rome till the 3d century B. C. Marcus Porcius Cato, whose *Origines* (extant only in fragments) tells of the origin of Rome and some other Italian cities, is held to be the father of Latin prose. At the same time lived Ennius, a man of considerable genius, who wrote Roman history (*Annales*) in verse. Only fragments of the latter's works remain. In the 3d century, also, arose the drama. Andronicus, the first playwright, adapted his plays from the Greek. Of comedy the chief representative is Plautus, from whose work we have 20 plays, full of bright, witty dialogue and funny, laughable incidents. Plautus wrote at the end of the 3d and the beginning of the 2d century B. C. Soon after came Terence, six of whose comedies have come to us, which address a more refined and cultivated taste.

The drama was based on Greek plays, but the satire was wholly Roman. This was a general term to include most poetry which was not epic or dramatic. But the satire, in our sense of the term, or the really satirical satire was founded by Lucilius in the early half of the 2d century B. C. His satires were skits on the public men of the day and a free criticism of contemporary life; but we have only a few scraps of his poetry.

In the 1st century before Christ Varro was a writer of great learning on many subjects, and also a witty satirist. Cicero was ten years younger than Varro, and is held to have created a perfect prose style. His speeches show the power they must have had over the senators to whom they were addressed. He was the author also of many philosophical works. Cicero is noted more for his style than for deep thinking. Catullus was the first Roman to write lyrics in the Greek style. By many his odes are held to contain more real poetry than those of Horace. Lucretius sang of epicureanism in *On the Nature of Things*, which, like all of his work, is noted mainly for fine passages.

The Augustan age of Roman poetry — the latter part of the 1st prechristian century — was its greatest age, the time of Vergil, Horace and Ovid, familiar names throughout the civilized world. Vergil's *Pastorals* and his four *Georgics*, poems on farm life, are imitations of the Greek. His *Æneid*, in which he emulates Homer, was written to stir up Roman patriotism by tracing Rome's origin to Troy and the gods. Horace's father had been a slave, but he was given a good schooling. His *Odes*, though they imitate Greek lyric poetry, have much that is Roman and original. Their grace, beauty and finish of language are so exquisite as to escape even the most skillful translation. His satires and epistles were the most popular of his writings, because so full of homely commonsense. Ovid's great poem is the *Metamorphoses*, a collection of stories which turn on the change of men and women into animals, trees, plants or flowers.

In the same century the great prose-writers were Cæsar, Sallust and Livy. Cæsar told of his campaigns in a simple, straightforward style and in the best and purest Latin. Sallust, who wrote of the Catilinian conspiracy and the war with Jugurtha, was the first who really deserved to be called a historian. Of Livy's history of Rome the later and more important books are lost. His style is bright and picturesque.

Except for Seneca, the essayist, and Martial, the witty writer of epigrams, there was no writer of importance till the age of Domitian (81–96 A. D.), the age of Juvenal, Tacitus, Pliny the Younger and Quintilian. Juvenal's satires are bitter and savage. They grew out of his honest indignation against the vulgar rich and the fortune-hunters with whom Rome swarmed. Tacitus was a successful lawyer and a man of the world as well as a writer. His style is concise and nervous. His *Agricola*, the life of his father-in-law who was governor of Britain, is a masterpiece of biography. His *Annals* and *Histories* rank near Thucydides. His other main work was his *Germany*, a description of the region and its people Pliny, as governor of a Roman province in Asia Minor, came into collision with the early Christians and gave his opinion of them to Emperor Trajan in a letter. His many other letters also are of interest, as illustrating sides of Roman life which would otherwise be unknown to us. Quintilian, a professor of rhetoric, has left a valuable treatise on this and kindred subjects, taking in the whole subject of education. See Wilkins' *Primer of Latin Literature*.

SYRIAC LITERATURE

This is Christian. The oldest work we have is a translation of most of the Bible, known as the Peshito version, which is of great value to scholars. St. Ephraem, who lived in the 4th century, is the first important author. He was followed by a steady stream of writers until the 9th century, but most of their writings are lost. The work of these authors was chiefly important in that it acquainted the Arabs with classical learning. Among these scholars and authors were Jacob of Edessa, Bar-Ali and Bar-Hebræus.

ARABIAN LITERATURE

Long before the time of Mohammed celebrated Arabian poets sang the feuds of tribes and the praises of heroes and fair women. During the great fairs at Mecca and Okadh (Okâz) poetic contests were held before the people, as at the Grecian games, and the prize-poems were written over again in golden letters. Among the famous poets of this early time were Nabegha and Kaab-ben-Zohair, whose verses are remarkable for pathos and rich imagery, and glow with love and hate. Literature, science and art flourished under the caliphs (750–1258 A. D.). They were most generously fostered by Almansor (754–775) and the famous Haroun-al-Rashid (786–808). Translations were made from the best Greek, Syriac and old Persian writers, schools founded and libraries gathered. While Europe was buried in the dark ages, the Arabians became a cultured race, and that almost as rapidly as the Mohammedan conquest had been achieved. The Arabs took the lead in geography, and refounded medicine, Avicenna's *Canon of Medicine* being the only handbook on the subject for a long time. Theology and law were based on the Koran. The collection of traditions, known as the *Sunna*, which gives an account of the sayings and doings of Mohammed, also is an authority. The most celebrated of the commentators on these books were Zamakhahari and Baidhawi. In philosophy the chief study of the Arabs was Aristotle, and their most famous commentator on him was Averroes, who wrote at the end of the 12th century. Albateni, who died in 929, was the greatest of their astronomers. In mathematics they introduced from India the numerals now in use, besides developing algebra and trigonometry. Perhaps the greatest historian was Masudi (died in 957), who called his work *Golden Meadows.* Motanebbi and Abu-Teman gathered the old poems that make up the collection *Hamasah;* Busiri's *Bordah* is a work in praise of Mohammed; and Azeddin's poem of *The Birds and the Flowers* was very popular. Harivi, who died in 1121, was famous for his novels, written in rhyming prose like the Koran. Romances and legendary tales abounded. The most famous were *The Arabian Nights' Entertainments*, *The Exploits of Antar*, *The Exploits of the Champions* and *The Exploits of Bibars.* From these books the tales of fays, charms, sorceries and enchantments passed into the poetry of the west. How the stories of *The Arabian Nights' Entertainments* came to be told is noted by an Arabian historian. A Persian king used to marry a new bride every day, and kill her next morning. One wife was Scheherazade, who had understanding and prudence. As they sat together she began a tale, and late at night she broke it off at so interesting a point that the king next morning spared her life and at night begged her to go on with her tale. So she did for a thousand nights. Meantime she bore him a child. Presenting the child, she told of the craft she had used; and the king, whose love she had now gained, admired her sagacity and let her live. The book, we are told, was written for the Persian princess Homai, whose mother appears to be the Esther of the Bible. The Arabians obtained these stories from the Persians; additions were also made of Indian and Arabian tales. *The Arabian Nights' Entertainments* has been more read than any other book of tales ever written.

ITALIAN LITERATURE

The literary language of Europe, especially of Italy, during the middle ages was Latin. It was Dante Alighieri (1265-1321), who by a sublime masterpiece revealed the power and compass of the Italian tongue. That masterpiece is the *Divine Comedy.* Petrarch (1304-74) and Boccaccio (1313-75) with him form the trio who made the 14th century the golden age of Italian literature. Italy is the only country in which literature reached its height in its opening period. Petrarch lives in fame, not because of his many Latin books, but by reason of the unequaled beauty of his songs and sonnets, written in the despised tongue of the people. Boccaccio made a lasting place for himself among his country's great writers by his *Decameron* and other tales, which formed the standard of perfect Italian prose.

The revival of classical learning made the cities of Italy, especially Florence, centers of letters. *On the Family* is the best-known work of Alberti (1404-72), who excelled as architect, poet and prose-writer. The best work at this time consisted of narrative poems, the great names being Ariosto, the author of *Orlando Furioso*, and Boiardo. Machiavelli (1469-1527) was the leading historian, his *Prince* being translated into most modern languages. The graphic biography of Benvenuto Cellini (1500-71) the artist is a valuable picture of the times. The *Pastor Fido* of Giovanni Guarini (1537-1612) and the *Aminta* of Tasso (1544-95) are able dramas. Tasso, whose great poem was *Jerusalem Delivered*, ended the period in which Italian literature had been pre-eminent in Europe.

The foremost Italian of the 17th century was Galileo, whose scientific writings are penned in clear and pure prose. Alfieri, who wrote at the end of the 18th century, is the only great tragic writer that Italian literature possesses; and Manzoni, a writer of the 19th century, produced the only great Italian historical novel, *The Betrothed.* Silvio Pellico is known by *My Prisons*, his touchingly natural account of his imprisonment by the Austrians. The historians of the 19th century were Balbo, Capponi and Cantu. The eloquence and pure style of Mazzini's political writings make them valuable literature. Good poetry has been written, as the lyrics by Manzoni and the satires by Giusti. Among the best books produced since Italy became a united nation are *Military Life* and other works of E. de Amicis and the *Autobiography* of Dupré the sculptor. See Sismondi's *Literature of the South of Europe*.

FRENCH LITERATURE

The earliest writings of France were the love-songs of the troubadours and the verses of the trouvères on the deeds of kings and knights. Of the many early chronicles the best is Froissart's, which is still read; while the *Memoirs* of Comines, who lived in the reign of Louis XI, are both valuable and well-written.

The revival of classical learning in the 16th century, which stirred literature with such power in England, had a like effect in France. It produced Rabelais, "the jester of France," and Montaigne, one of the greatest of essay-writers, the perfect style of whose essays has made them classics. Calvin, also, in his *Institutes of the Christian Religion*, made French prose speak with an eloquence it had never before known. The tales of Margaret of Navarre have always been popular. Clement Marot's verses were more witty than poetic, but Mathurin Régnier (1573-1613) wrote strong satirical poems.

The age of Louis XIV is a noted one in French literature, and ranks among the foremost in the world's literature. At this time Pierre Corneille, the greatest French tragedian, wrote his masterpieces, *The Cid*, *Horace*, *Cinna* and *Polyeucte*. Second only to him, Racine wrote his *Andromaque*, *Iphigénie* and *Phèdre*, based on Greek stories, and *Athalie*, taken from an incident in Hebrew history. Corneille tried comedy in *The Liar*, but was far outshone in this department by Molière, whose *Tartuffe*, *The Misanthrope*, *The School of the Women*, and other plays, are as familiar to the world as those of Shakespeare. The four most famous French preachers also lived at this time — Bossuet, Bourdaloue, Massillon and Fénelon. Lafontaine wrote fables as no one has written them since. Boileau, the leading poet of the time, was greater in his influence upon the work of other poets than because of anything he himself wrote. Descartes' *Discourse on Method*, Malebranche's *Investigation of Truth* and Pascal's *Thoughts* were important philosophical books of the period, while the last is a most precious work to Christians of all nations. The wits of the age, who are famous still, were La Rochefoucauld and La Bruyère. Cardinal de Retz in his *Memoirs* of the war of the Fronde and Hamilton in his *Memoirs of the Count of Grammont* produced valuable historical works. Fénelon's *Télémaque* became immensely popular, as it was thought to censure Louis XIV. French life under that monarch is best set forth in the *Letters* of Madame de Sévigné to her daughter and friends.

The 18th century was an age of philosophy and bold thought. Montesquieu, whose *Persian Letters* were a satire on everything French, as it then was, and whose best book was *The Spirit of Laws*, had great influence in stirring and emboldening French thought. But it would be impossible to exaggerate Voltaire's influence on the growth of thought which ended in the French Revolution. His tragedies, as *Mérope* or *Mahomet* rank next to those of Corneille and Racine, while his miscellaneous poems are unsurpassed. His views on philosophy are set forth in his *Philosophical Dictionary*, and his *Age of Louis XIV* is still worth reading. Rousseau's influence was almost as great. His *Contrat Social*, which was read both by learned and ignorant throughout the country, was a direct attack on the throne. Diderot's and D'Alembert's *Encyclopédie* also was influential, embodying the boldest views as to society, government and religion. Buffon's *Natural History*, though no longer of scientific authority, is one of the French classics. Two other classics are St. Pierre's *Paul and Virginia* and Prévost's *Manon Lescaut*. The leading novel of the day was Le Sage's *Gil Blas*. Beaumarchais' *Barber of Seville* is popular still.

In the 19th century first arose what was called the romantic school, the best plays of which were written by Hugo, Dumas and Alfed de Vigny. De Vigny also wrote a good novel, *Cinq-Mars*, but the greatest in this department was Hugo, whose masterpiece is *Les Misérables*. The most popular was Dumas, whose *Count of Monte Cristo* and *Three Guardsmen* are only two among the best of his many good stories. Dumas is noted also for his style. Much less read now than formerly are two other authors of this school, Eugène Sue and George Sand. The greatest French novelist, Honoré de Balzac, belongs to what is known as the realistic school of writers. In power, no story that has been written surpasses *Father Goriot* or *Cousin Bette*, unless it be *Adam Bede*. Of younger writers of the same school, the foremost perhaps, are Gautier and Guy de Maupassant; while as a writer of detective stories Émile Gaboriau's *File No. 113* is unequaled even by Edgar Poe's *Marie Roget*. The chief French poet of the century was Alfred de Musset, though Hugo was even greater in his *Odes and Ballads* than as a novelist or playwright; while Béranger was one of the greatest French song-writers, and Lamartine also ranked high as a poet.

The most important work of the 19th century was done in history; the leading names are Guizot, Thierry, Sismondi, Michelet, Martin, Capefigue, Thiers, Mignet.

Louis Blanc, Lamartine, Napoleon III and Lanfrey. Quatrefages, Champollion, Lenormant, Renan, Cuvier, Lavoisier, Laplace, Saint Simon, Fourier and Bastiat are some of the leading scholars and scientists into whose work we cannot go. The two greatest philosophers of this period were Victor Cousin and Auguste Comte, while Taine and Sainte-Beuve perhaps were its greatest critics. See Demogeot's *History of French Literature*.

SPANISH LITERATURE

The famous *Poem of the Cid*, composed, probably, in the latter half of the 12th century, is a song of warlike deeds, picturesque and spirited. In the 15th century appeared romances of chivalry and ballads. The *Amadis of Gaul*, first and best of books of chivalry, contains passages of great beauty. Spanish ballads were handed down orally from generation to generation, the great mass being gathered in the 16th and 17th centuries. The most interesting are those which celebrate the national heroes and the Moorish champions against whom they fought. At the end of the 15th century appeared *Celestina*, novel and drama in one, which soon became most popular and was read in translation throughout Europe.

Garcilaso de la Vega, writing in the first half of the 16th century, left at his early death a small collection of the most beautiful poetry in the language. In this period the best Spanish lyrics were written, one lyric writer, Herrera, being entitled to a high place among European poets. Just when the romance of chivalry was dying a natural death, Cervantes killed it by the fun poked at it in his famous *Don Quixote*, which, with its quaint humor and deep insight into human nature, is the best known and best loved of Spanish books. Lope de Vega, who lived at the same time as Cervantes, was called the prodigy of nature because of the mass and variety of his works. He is best known by his dramas, of which he wrote over 2,000. Calderon's plays are noted more for their fine poetry than as dramas. Molina and Moreto, as good playwrights but not as good poets as Lope de Vega and Calderon, are only two among many dramatists of ability in the golden age of Cervantes. At the end of the 17th century Spanish power and literature sank together and completely. Among recent books Juan Valera's *Pepita Ximenez* is one of the best novels of the century. See Ticknor's *History of Spanish Literature*.

PORTUGUESE LITERATURE

The best early chronicle of Portugal is that of Fernam Lopez (1380-1459). The oldest and still the finest tragedy is the *Ines de Castro* of Antonio de Ferreira (1528-69). The national pride and glory, deeply stirred by the discoveries and conquests of the nation in Asia, Africa and America, found expression in the works of Portugal's one really great poet Camoens (1524-80). His great work is *The Lusiads*, which, together with his sonnets, songs and dramas, show a breadth of genius that places him in the foremost rank of European poets. With Camoens Portuguese literature reached its height. The only other writers before the 19th century who are at all noteworthy are the historians, among them De Barros (1496-1570), who wrote *The Conquest of the Indies*, and Brandao, who wrote *The Lusitanian Monarchy*. Two writers at the beginning of the 19th century wrote good poetry, F. M. do Nascimento, noted for his lyrics, and Manoel du Bocage, whose sonnets are the finest in the language. Herculano was something of a poet, but is better known as one of Portugal's finest historians. Brazilian writers have also made their mark Of the poets, besides the two Barposas, should be mentioned Magelhaens, the most national of them all. The leading historian is Varnhagen, who wrote *The General History of Brazil*. See Bouterwek's *History of Spanish and Portuguese Literature*.

FINNISH LITERATURE

By 1642 the translation of the Bible into Finnish, which had been begun in the 16th century, was completed. There was no written literature before this, but in 1835 Dr. Elias Lönnrot gave to the world Finland's famous epic of *Kalevala*, popular songs taken from the lips of the peasantry during many years of research and wandering. These songs had been handed down by singers, who sang to the sound of the *kantela*, a sort of rude harp. The style of *Kalevala* may be judged from *Hiawatha*, which is an imitation of the Finnish poem. The great poet and dramatist of Finland was Runeberg (1804-77).

DUTCH LITERATURE

Hooft (1581-1647) was the first writer to create a good prose Dutch. He was noted also as a poet and playwright. Vondel (1587-1679) is held to be the greatest poet of Holland, and wrote dramas that are still performed. But his popularity was not equal to that of Jakob Cats (1577-1660), whose maxims for a long time, with the Bible, were the only book found in every cottage. One of Cats' followers, Van der Goes, wrote a beautiful poem on Amsterdam. Erasmus Boerhaave, Grotius and Spinoza, who wished to be read beyond the borders of their own land, wrote in Latin, and so their works hardly belong to Dutch literature. Bilderdijk's great epic poem, *The Destruction of the First World*, is the best work of the 18th century, though Helmer's patriotic songs against the French were very popular. Schimmel is noted for his dramas, and Beets for his *Camera Obscura* and other tales. Another popular novelist is Van

Lennep, some of whose stories have been translated into English. "Multatuli" (Dekker) has in *Max Havelaar* written a book which has been translated into most European languages, and is a work of genius.

SCANDINAVIAN LITERATURE

This has been written in Iceland, Norway, Sweden and Denmark The *Eddas* are two collections of old Scandinavian literature. The younger or prose *Edda* was written by the Icelander Snorri Sturluson about 1230. It is in three parts: the first a series of stories told by the god Odin to Gylfi, a Swedish king; the second and third are on the art of poetry and prosody. The elder *Edda* consists of legends in verse of Scandinavian gods and heroes. It was written mainly in Iceland from the 9th to the 11th century. Of great importance also are the Icelandic sagas, which were chronicles, local and family histories and biographies, as the *Christian Saga*, the story of the introduction of Christianity into Iceland, and the *Chronicle of the Norwegian Kings*. These sagas were numerous, and many of them were masterpieces of literary writing. This is all the more remarkable when it is remembered that, when this valuable literature flourished in this out-of-the way corner of the world, Europe was sunk in ignorance.

Sagas also form the early literature of Norway. There are no distinctively Norwegian writings of ability till modern times. The creator of this modern literature was Wergeland (1808-45), who addressed his poetry to the peasants. Jansen wrote good lyrics, Garborg wrote strong tales and novels, and Björnson's tales from peasant-life are of great merit. Ibsen in his poems and plays has shown power and genius, a desire for truth and a strongly realistic way of looking at things. The same, practically, may be said of the novels of Jonas Lie.

The early Danish popular songs were collected by Vedel in 1591. In the 18th century Ludvig Holberg wrote stories, poems and plays, and founded Copenhagen Theater. His most popular plays were *The Pewter Statesman* and *The Arabian Powder*. His *History of Denmark* is a standard work. The next poet of first rank was Johannes Evald, who, besides his plays of *Balder's Death*, *The Harlequin Patriot* etc., wrote the national song, *King Christian at the High Mast Stands*. The popular lyric poet was Jens Baggesen, while the leading poet of the 19th century is Adam Oehlenschläger, among whose plays are *Baldur the Good* and *Gods of the North*. The great novelist of Denmark was Hans Christian Andersen, who, however, is best known by his short tales and fairy-stories, which have been translated into most modern languages. The contemporary writer, Georg Brandes, born in 1842. has won fame as critic and *littérateur*, especially as a student and expositor of Shakespeare.

The earliest Swedish literature was the heroic and chivalric ballads. In the 14th century chronicles and some lyrics were written. Stjernhjelm (1598-1672) first wrote sonnets, and his best masque is *The Captive Cupid*. The great botanist, Linné, powerfully influenced literary activity by his own work and through the pupils that surrounded him, many of whom became celebrated. In theology in the 18th century the great name was Swedenborg. Bellman (1740-95) was a song-writer of power. The foremost Swedish historian is Geijer (1783-1847), while Tegnér (1782-1846) is the chief poet of the country. His *Frithiof's Saga*, translated by Holcomb and by Sherman. is an epic worthy of Scott. Other leading modern poets were Franzén, Atterbom, the historian Geijer and Stagnelius. One of the best of Swedish tragedies is the *Eric XIV* of Börjesson; while no comedies stand higher than those of three women: Fredrika Bremer, E. S. Carlén and Mme. Schwartz. Perhaps the most powerful Swedish novel is *The Last Athenian* by Viktor Rydberg.

GERMAN LITERATURE

This dates back to the rude literatures of the races whose union has formed the German people. Charlemagne made a collection of German popular poetry, and during the days of chivalry many nobles and men of humbler birth belonged to the *minnesinger* or singers of love, who roamed from castle to castle and court to court, and sang the history of Troy and the story of King Arthur and his knights. It is to this period that the greatest treasures of German national literature belong, the *Nibelungen Lied* and *Gudrun*, epic poems telling of the heroic combats of the gallant Sigfried and how he won the hand of Kriemhild, the world's wonder of grace and beauty, the daughter of King Gunther; of Brunhilde, the unconquerable warrior-queen; of the Nibelungen treasure sunk in the Rhine: of Etzel (Attila) the Hun; and of the great battle and death of the heroes in Hungary. In the 15th century the mysteries and passion plays were at their height, which still linger in a few places (notably Oberammergau) and gave origin to the German drama. During the Reformation Luther's translations of the Bible fixed the literary language of the Germans, and his beautiful hymns are still sung.

The brilliant epoch of modern German literature begins with Lessing, and since his time every branch of scholarship and learning has been enriched by German genius, and the Germans took rank among the foremost scholars of the day. In philosophy the intellectual brilliancy and keenness of Kant, Fichte, Schelling and Hegel placed them among the world's great philosophers. In history Ranke, Niebuhr and Mommsen, among others, are of world-wide reputation. The travels and works of Humboldt gave impetus to the taste for scientific inquiry. In poetry and prose the name of Goethe is a host in itself, and closely associated with him is the name of Schiller. Jean Paul Richter, the satirist and humorist, during the closing years of the 18th and the early part of the 19th century exerted a mighty influence over the middle classes. With the tremendous advance in Germany's material prosperity, however, there came a corresponding decadence in the national taste. While works of distinction were still produced, the people of Germany were so absorbed in a mad struggle for world supremacy in trade and world dominance in international relations that the audience was extremely small and the work, both in literature and art which attained the vogue, was, for the most part, coarse or commonplace or vicious; in striking contrast with the time when Schiller's work threw the whole nation into a frenzy of admiration. See Hosmer's *History of German Literature.*

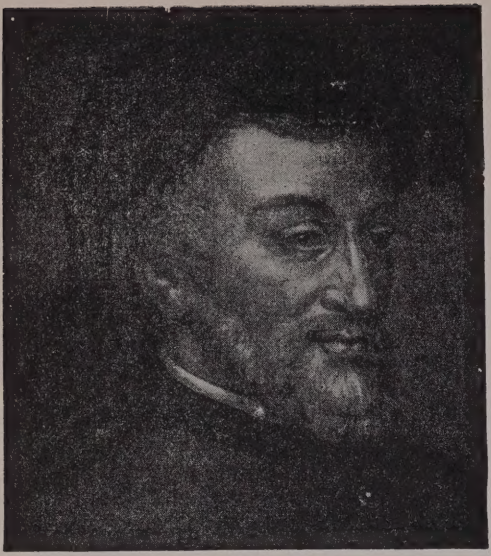
ENGLISH LITERATURE

The earliest writings of Englishmen cannot be read to-day except by scholars. Part of these are in Latin and part in Anglo-Saxon. The first great poet of England was Geoffrey Chaucer, born probably in 1340. A scholar as well as a man of the world, he early in life studied the French romances of love and chivalry, his first great work being a translation of the *Romance of the Rose* into English verse. In the same strain were his *Court of Love* and other early poems. But there was another literature which he studied in later years, which greatly influenced him and his successors for a century and a half; this was the Italian. Dante had lived in the generation before Chaucer; Petrarch and Boccaccio were men of his own time. Chaucer's *Troilus and Cressida*, his *Assembly of Fowls* and some of his *Canterbury Tales* are founded on Boccaccio. The greatest and most famous of Chaucer's works, is the *Canterbury Tales.* The plan of the poem is the journey of 30 pilgrims from London to Canterbury, to visit the shrine of St. Thomas à Becket, the journey being enlivened by the telling of a series of stories by the travelers in turn. First, a prologue describes each of the company, then come the stories, most of them told in verse of most exquisite music. Chaucer is a poet of real life, not of manners and the outside of society. In the same age appeared the first prose works in what would be recognized by most people of to-day as readable English. The most important are the writings of John Wiclif, who in 1382 furnished the people the first English Bible. His tracts on the abuses of the church, written in plain and powerful English, had great influence throughout the country and in Bohemia.

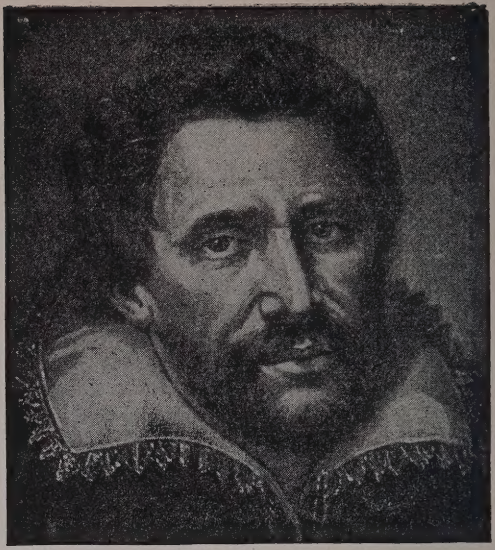
The 15th century was barren of important works. Before the middle of the century printing was invented, not by accident, but because of the hitherto unheard-of demand for books. The reawakening of classical learning in Europe was another great event of this century. During the middle ages the literature of Greece and the greater part of the most brilliant Roman literature had been lost to western Europe. In Constantinople Greek scholarship and much of Greek literature lingered. A desire to learn the Greek language, a thirst to read Homer and Plato, had been awakened in the preceding age, and when in 1453 Greek scholars were driven from Constantinople by the Turks and forced to gain a livelihood by teaching, they found the west eager to learn and read. Printers began to publish these classics, and young scholars from England rushed to Italy to study under the new teachers. To this new knowledge of the greatness of the past was added the discovery of America. The world grew larger and richer to men; they began to see and wonder and think. Thus began the modern era.

The Reformation came after Erasmus's Greek Testament, while our present English Bible we owe to Tindale more than to any other man. The spirit of what was called the new learning, as well as that of social, political and religious reformation, found expression in the *Utopia* of Sir Thomas More, written in Latin and describing an ideal state on the island of Nowhere. The two poets of the reign of Henry VIII who are best known to our times are the two friends, Wyatt and Surrey. They, like Chaucer, had studied the poets of Italy. Both were of noble birth and the highest courtly accomplishments, and both wrote sonnets, metrical versions of the Psalms and love-poems of great fervor.

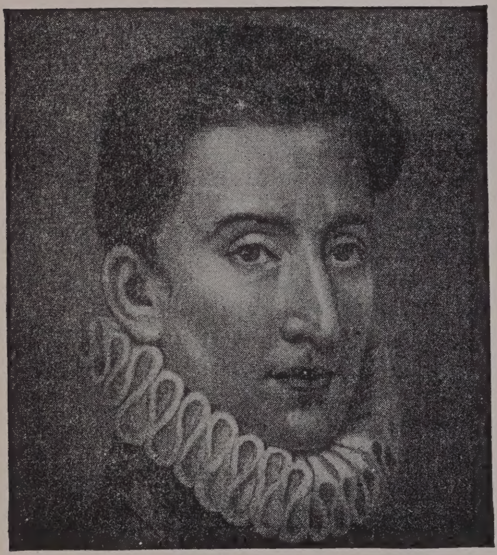
The great Elizabethan literature reached far into the reign of James I. England became a land of poets; Sidney, Raleigh, Hall, Donne, Peele, Marlowe, Daniel, Drayton, Greene and a host of others filled the island with the voice of song; and Spenser and Shakespeare alone would have made their age famous. At the beginning of the period Thomas Sackville planned a series of poems on great men of English history who had been cut down by trouble, called *A Mirror for Magistrates.* The part of it that was finished is poetry of power. But the greatest non-dramatic poet of that age was Edmund Spenser, whose pastoral poem, *The Shepherd's Calendar*, first gave him reputation and favor at Queen Elizabeth's court. His masterpiece is *The Faerie Queene*, a poem of chivalry, full of encounters of knights, combats with giants and dragons, with many a rescue of the weak by the



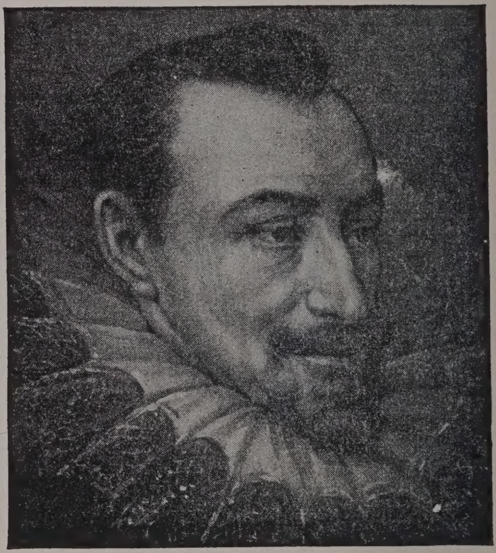
Geoffrey Chaucer



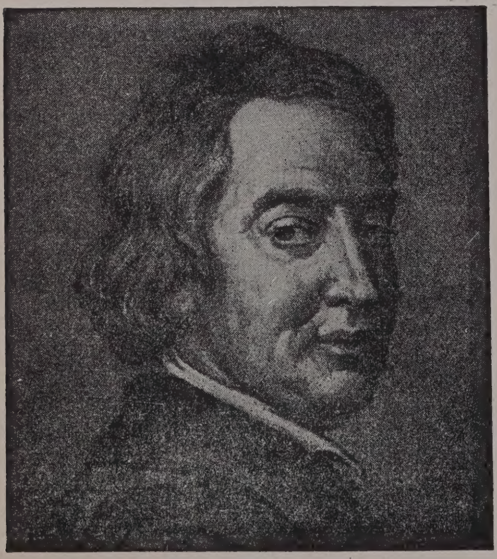
Ben Jonson



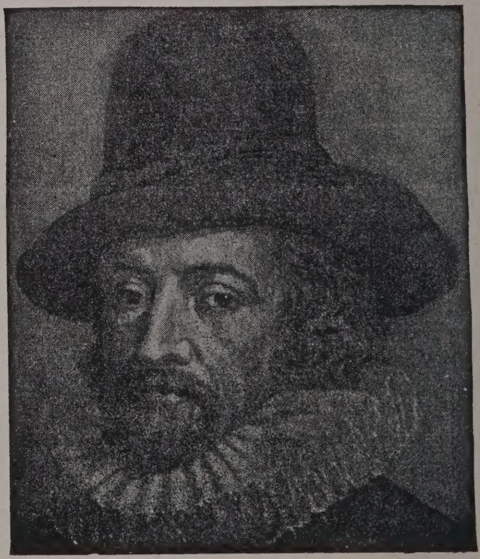
Sir Phillip Sidney



Edmund Spenser

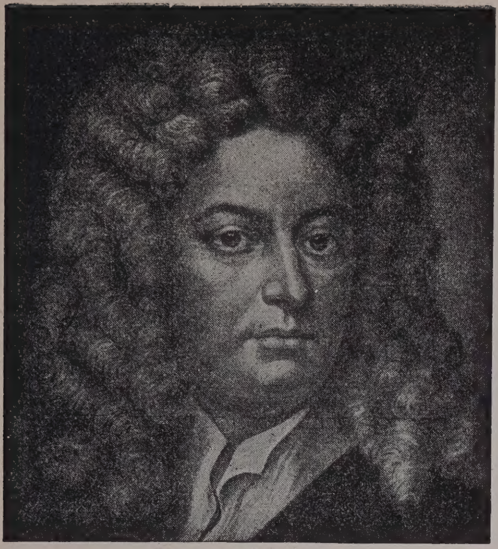


John Dryden

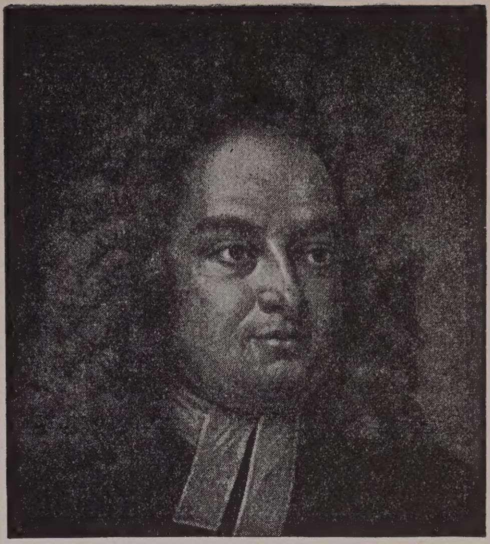


Francis Bacon

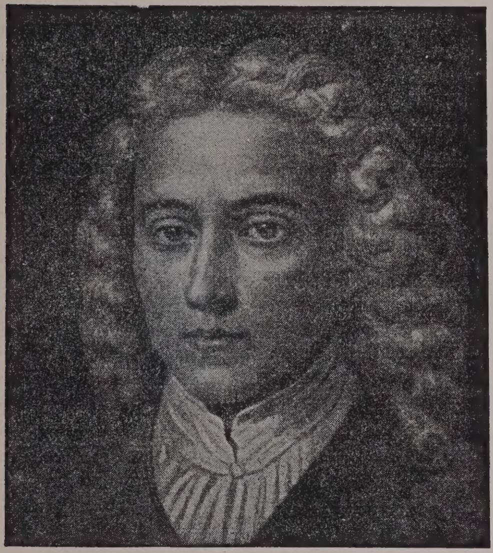
GREAT ENGLISH WRITERS PREVIOUS TO THE EIGHTEENTH CENTURY
For portraits of Shakespeare and Milton, see text



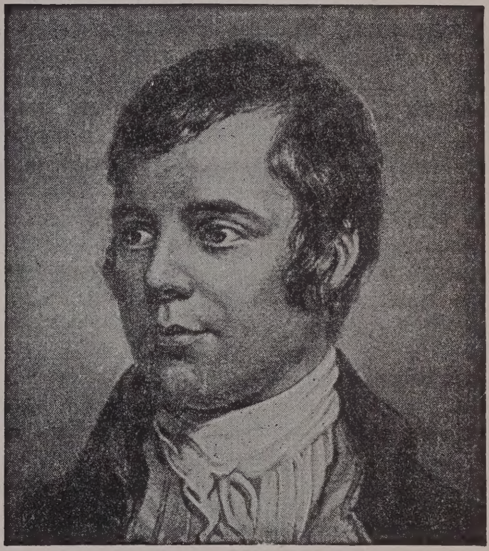
Joseph Addison



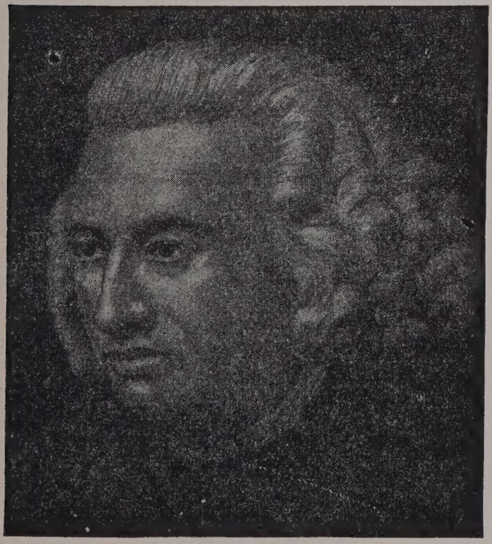
Jonathan Swift



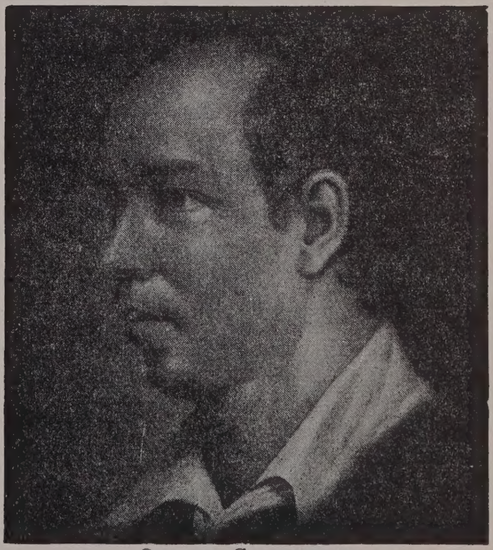
Alexander Pope



Robert Burns

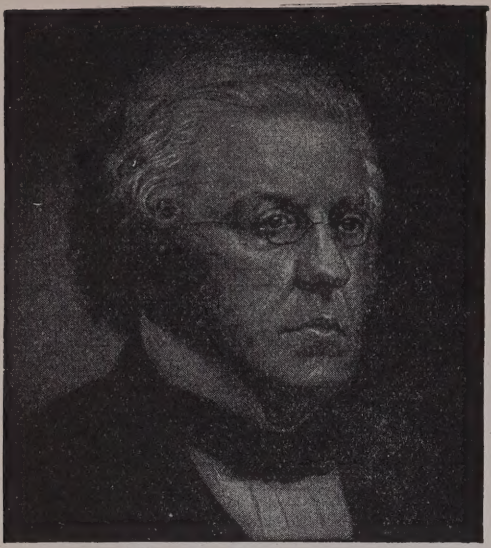


Samuel Johnson

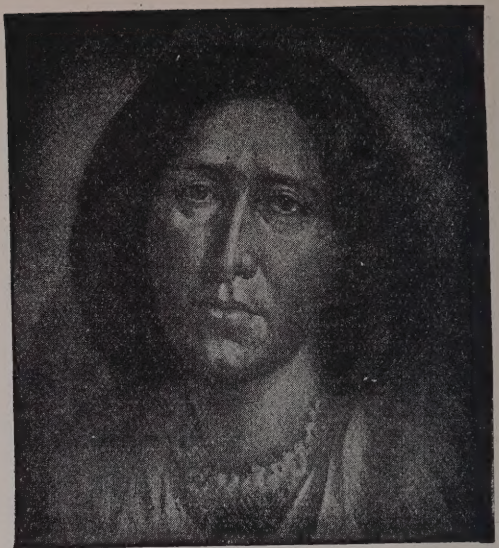


Oliver Goldsmith

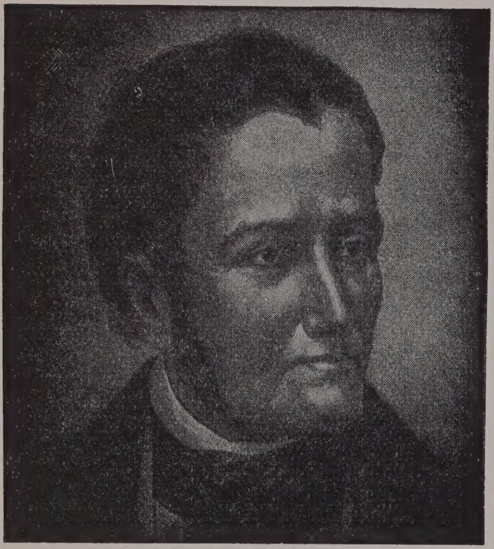
ENGLISH WRITERS OF THE EIGHTEENTH CENTURY



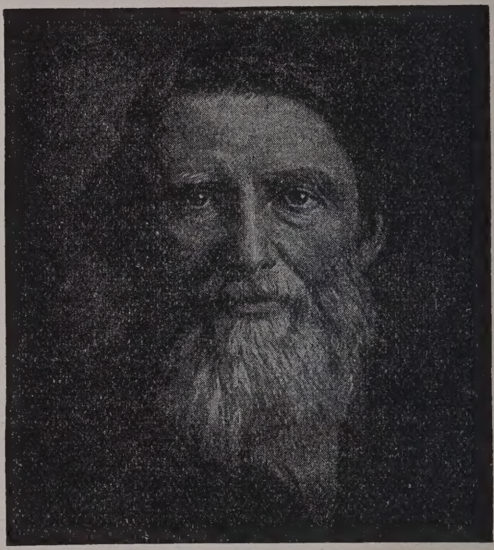
Wm. M. Thackeray



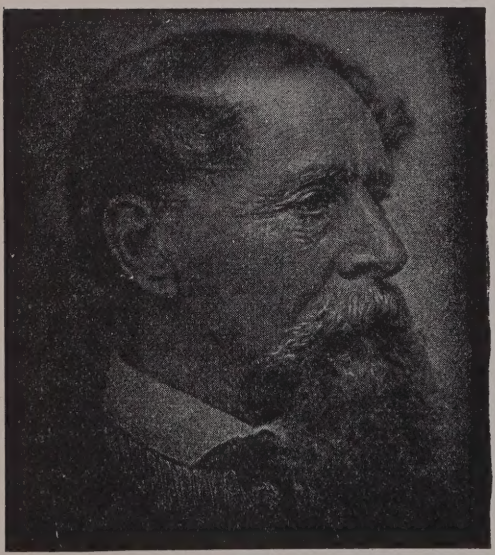
George Eliot
(Mary Ann Evans)



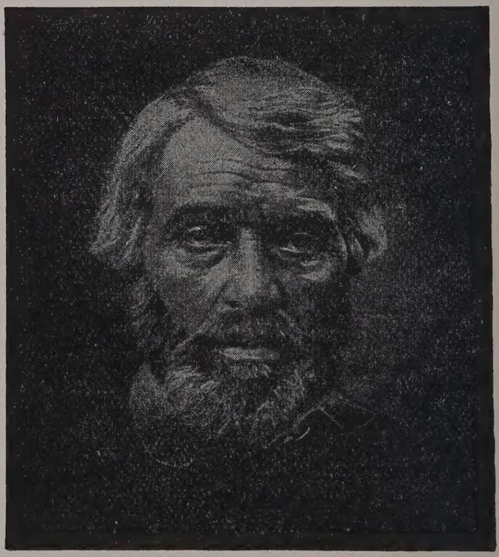
Thomas De Quincey



John Ruskin



Charles Dickens



Thomas Carlyle

ENGLISH NOVELISTS AND PROSE WRITERS OF THE NINETEENTH CENTURY valiant. As a mere story it is a poem of great power, but under the guise of chivalrous adventures the poet wrought out a supreme allegory of life.

It was in this age that the drama rose to a height never reached before or since. Dramatic representations began in England as early as the 12th century in the form of miracle plays, the subjects being Bible stories and legends from the lives of the saints. Later, allegorical plays called moralities were in vogue. But in the latter half of the 16th century was born the modern English drama, the drama of real life. How sudden was this outburst of dramatic genius is seen in the fact that in less than 50 years after the first rude tragedy, *Hamlet* and *Lear* were created. Greene, Peele, Lyly, Marlowe and their companions, brilliant and eager young men, attached themselves to the stage and made it and themselves suddenly famous. Marlowe is a type of the class, raising himself to fame by a tragedy produced just after leaving the university and writing several plays of great power. His *Doctor Faustus*, founded on the same story as Goethe's *Faust*, is a tragedy of terrible power, and has passages worthy of Shakespeare.

But in the last 20 years of Elizabeth's reign, when Marlowe and his friends were in their glory, the greatest of poets arose and eclipsed them all. The plays of Shakespeare fill the period from 1585 to 1616, when the poet died. It is impossible here to give any worthy account of these great works. The plays, early classified as comedies, tragedies and histories, embody all the feelings and passions of the human soul; they possess such wealth of imagination, largeness and many-sidedness of thought and power to touch every chord of feeling and teach every kind of wisdom as set them apart from all other works of human genius.

Next after Shakespeare, in order of time and merit, comes his friend Ben Jonson, who wrote in the reigns of James I and Charles I. Most of his plays were comedies and masques. The masques were entertainments, not for the theater, but for the court, with little dialogue but with much costly scenery and costumes and with mythical characters, as nymphs and river-gods. As a song-writer Jonson had few equals. Beaumont and Fletcher lived at the same time as Jonson, and wrote joint plays which by some critics are ranked next to those of Shakespeare.

Roger Ascham, at the beginning of this period, wrote clear and vigorous prose in his *Toxophilus* and his *Schoolmaster*. John Lyly in his *Euphues* indulged in a fantastic style which was named euphuism from the title of his book. Sir Philip Sidney's famous *Arcadia* is a romance with all the impossibilities and enchantment of a story of mediæval times. His *Defense of Poetry* is one of the earliest attempts at literary criticism in English. Richard Hooker's *Ecclesiastical Polity*, the first book of which has been compared to the peal of a cathedral organ, is a work of genius. It is a defense of the Church of England as established under Elizabeth. In 1597 Francis Bacon published 10 short essays: in the latest edition there were 58. Nothing equal to them in any way has ever been written since. His *Advancement of Learning* is a view of knowledge as it then was. His great work in Latin, *Novum Organum*, is a treatise on the inductive philosophy. This, the true method of studying nature, was not created by Bacon, but he held it up before the world in such a light as to make its claims seen and felt and to earn for himself the title of Father of Modern Science.

John Milton, born in 1608, ranking next to Shakespeare among English poets, wrote in three distinct periods. That of his early poems began in his boyhood, the noble *Hymn on the Nativity* being written before he left the university. His two companion pieces, *L'Allegro* and *Il Penseroso*, show, the one, cheerful sympathy with the bright side of nature and life, and the other, sober thought on the earnestness and mystery which belong to them. The elegy *Lycidas* and the masque *Comus* are others of his early poems. Milton's second period as a writer was spent in defending Parliament against Charles I. For 20 years he poured forth tracts and treatises, the most eloquent of which is his *Areopagitica*, a plea for the freedom of the press. His last period as a writer gave to the world the tragedy of *Samson Agonistes* and the epics of *Paradise Lost* and *Paradise Regained*. *Paradise Lost* is his masterpiece and the greatest English epic.

Among the theological writers of Milton's time was Jeremy Taylor, whose sermons are famous in literature. *Holy Living and Holy Dying* and *Liberty of Prophesying* are his best-known books. George Herbert's religious poetry is good, as are also the love-poems of Lovelace, Herrick, Cowley and Waller. To the era of the Restoration belongs the immortal prose allegory of the Bedford tinker and nonconformist preacher, *The Pilgrim's Progress* of John Bunyan.

The greatest writer of the Restoration was John Dryden, whose many plays were highly popular. His *Absalom and Achitophel* has been called the most powerful satire in English verse. Another satire was *Mac Flecknoe*, while *Religio Laici* and *Hind and Panther* are religious discussions in verse.

In this period, from Charles II to Anne, modern science arose on the foundation laid by Bacon; Newton's *Principia* was an epoch-making book. At this time, also, John Locke and Thomas Hobbes wrote on politics and metaphysics. Their chief books are Hobbes' *Leviathan* and Locke's famous *Essay on the Human Understanding*.

The literature of the reign of Queen Anne was second only to that of the Elizabethan age. The famous essays of Richard Steele and Joseph Addison appeared in *The Tatler*, *The Spectator* and *The Guardian*, periodicals mostly made up of these and other essays. The most forcible prose-writer of the age was Jonathan Swift, whose *Tale of a Tub* is a satire against all churchmen outside the Anglican state-church; while *Gulliver's Travels* is an ingenious and humorous satire against mankind.

Alexander Pope was the chief poet of the day. His *Essay on Criticism* was written at 21. His *Rape of the Lock* and his *Dunciad* are keen and bitter satires. The *Essay on Man* is full of brilliant sayings, often quoted. Thomson's *Seasons* showed a heart in love with nature. Gray's *Elegy* and *Ode on Eton College* are perfect specimens of finished verse, as are also the *Odes* of William Collins.

Defoe's *Robinson Crusoe* is the one of his many works that has given him lasting fame. Samuel Richardson's *Pamela* was the first modern novel. A much greater writer, Henry Fielding, followed him, whose *Tom Jones* is one of the best of English novels. Then came Sterne with his wonderful humor, exemplified in his *Tristram Shandy*.

In history Hume and Robertson gave a new character and aim to the treatment of the past; and Hume's *History of England* and Robertson's *History of Scotland* and *History of Charles V* were the first of what might be called modern histories. Gibbon's *Decline and Fall of the Roman Empire* took even higher rank. In philosophy and kindred subjects the great names were Berkeley, Hume, Adam Smith (*Wealth of Nations*) and Joseph Butler (*Analogy*).

Johnson and Goldsmith are brilliant examples of the miscellaneous writers of their day. Johnson's *Lives of the Poets* is that one of his works which is most read at present. Some of these essays are classics. Goldsmith's *Traveller* and *Deserted Village* are charming poems; *She Stoops to Conquer* is one of the most successful of English plays; and *The Vicar of Wakefield* long was a favorite novel wherever English is read.

Cowper's poetry had great influence on later poets. His chief poem is *The Task; John Gilpin* shows his humor; *Lines on the Receipt of My Mother's Picture* his tenderness. The poems of Burns have a depth and intensity of passion and sweetness of rhythm that have made them widely popular. Among them are *Highland Mary*, *Tam O'Shanter* and *The Cottar's Saturday Night*.

The fullness of the literature of the 19th century makes it impossible to go into details. A new poetry of imagination and feeling had begun to spring up before the century opened. Coleridge devoted but a small part of his life to poetry, but his *Christabel*, *The Ancient Mariner* and *Love* are gems of English verse. Wordsworth's *Excursion* is but a fragment of a vast plan. Walter Scott was the poet of the Scotch chivalric legends, which he embodied in the *Lay of the Last Minstrel*, *Marmion* and *The Lady of the Lake*. But Scott left poetry for fiction when Byron suddenly became the first poet of the day. Byron, Shelley and Keats were poets of imagination and passion. Campbell and Southey would have had much greater reputations as poets had it not been for the brilliant galaxy that shone around them. Robert Browning and Mrs. Browning have a firm place among English poets, while Tennyson (1809–92) was the greatest poet of the past century and its chief representative of that grand English song which has done much to elevate the national character and refine the human heart.

In 1802 a few brilliant young men started the *Edinburgh Review*. Other reviews and magazines followed, and for them much of the most brilliant writing of the first half of the century was done by such men as Brougham, Mackintosh, Lockhart, Wilson ("Christopher North"), Macaulay, Carlyle, Lamb and De Quincey.

Beginning with Scott's 30 odd novels, which have entranced the world by their wonderful stories so vividly told, and coming through those of Thackeray, Dickens, George Eliot, Charlotte Brontë, Charles Reade, Anthony Trollope, Wilkie Collins, Dinah M. Muloch, Bulwer-Lytton, Charles Kingsley, George Macdonald, R. D. Blackmore and George Meredith to those of Wm. Black, Thomas Hardy, J. M Barrie, Walter Besant, Rudyard Kipling, Hall Caine, S. R. Crockett, Conan Doyle and Mrs. Humphry Ward, the novel has become the largest department of English literature.

In the number of these writers of fiction, naturally the range covered by the novel in our time is an enormous and varied one. There hardly is a domain which is deemed foreign to it, even outside its natural field of adventure, with its pictures of social life and its studies in and portrayal of character. Happily its legitimate function of entertainment in a wearying and engrossing age has not been lost, in spite of the ultrarealistic tendencies of the novel and its degenerating trend in the hands of ambitious but unpleasant and sometimes unwholesome writers. In this prolific department of literature it is gratifying to find the public taste, in the main, quickly nauseated with the pernicious in fiction and reverting, with unfeigned pleasure, to the historical romance in the successors of the gallant school of Scott.

The student of history has in the past half-century had much to entertain as well as instruct him in many solid and enduring contributions. The writers are many who have brought not only high scholarship, industry and great powers of research, but the rare gifts of animated and picturesque style. The master historians include — besides Macaulay, Carlyle, Grote, Milman, Hallam, Merivale, Buckle, Lecky, Stubbs. Freeman, Rawlinson, Green, Seeley, Creasy and Stephen — men of almost equal eminence, as S. R. Gardiner, James Bryce, Goldwin Smith, Herbert Paul and Justin McCarthy. Much of the work of these writers has enriched thought as well as informed the mind. Nor ought we to neglect to speak of the men who have done much excellent work in departments akin to that of the historian. We refer to the writers, among whom are jurists, university lecturers, professors and other eminent men of letters, who by their research have thrown light on English political institutions and the recent trend of the nation in legislation as well as in national expansion. A few of these may be cited, as E. S. Creasy, who wrote authoritatively on *The Rise and Progress of the English Constitution;* T. Erskine May on *Parliamentary Law and Usage* as well as on the *Constitutional History of England* since George III and on *Democracy in Europe;* Henry Maine on *Popular Government* and *International Law;* Frederick Pollock on *The Science of Politics* and the *History of English Law;* and R. F. D. Palgrave on *The House of Commons*, with illustrations of its history and practice. Further and helpful light on the politics and political problems of the time is afforded by the memoirs of prominent statesmen and the many instructive biographies which recent years have produced. Among the more important of these may be mentioned the many biographies of Mr. Gladstone, notably those by John Morley and by G. Barnett Smith, who also wrote a *Life of John Bright*, sketches of *The Prime Ministers of Queen Victoria* and a *History of the English Parliament.* Baron Rowton's monograph on *Lord Beaconsfield* (Benjamin Disraeli) should also be known to the modern student of English politics, as well as the monographs in the English Statesmen Series; H. D. Traill's *Marquis of Salisbury* in the Queen's Prime Ministers Series; John Morley's *Life of Richard Cobden;* Leslie Stephen's *Life of Henry Fawcett;* Andrew Lang's *Life and Letters of Sir Stafford Northcote* (Earl of Iddesleigh); Winston Spencer Churchill's *Life of Lord Randolph Churchill;* Herbert Paul's illuminative *Modern England;* and Lord Rosebery's *Lives of William Pitt* and *Sir Robert Peel* and his *Questions of Empire.* In the record of notable books in politics and the political life of the motherland it is proper to note the important treatise on *The American Commonwealth* by James Bryce, dealing with the American constitution and its development, a work which has been written not only with a scholar's dispassionateness but with remarkable intelligence and sympathy. Here also we must chronicle J. R. Seeley's *Expansion of England;* Lord Cromer's *Modern Egypt;* Sir Alfred Lyall's *The Rise of the British Dominion in India;* and the instructive series of political biographies connected with England's dominion in India, edited by Sir W. W. Hunter, under the title of *Rulers of India.* The series embraces the lives of the great English consuls and governors-general in India, from the era of Clive, Cornwallis and Hastings to that of Dalhousie, Canning, Lawrence and Mayo.

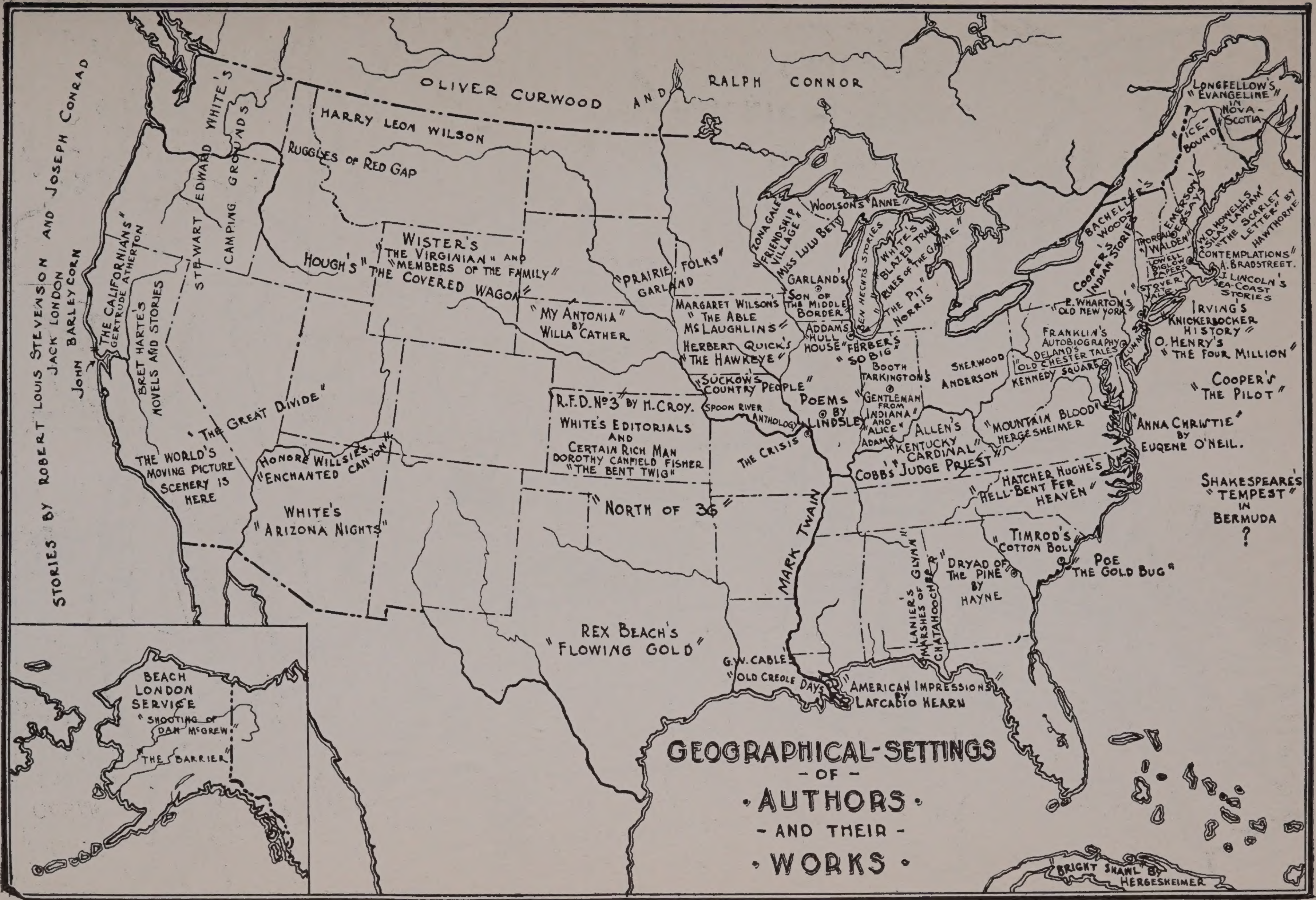
Wide and entertaining is the field of general biography, in the department that deals with the lives and work of contemporary men outside the ranks of statesmen and politicians. Our limited space will permit the mention of but a few productions of note that are likely to endure. Perhaps the more useful to the student consulting these pages are those that deal with *littérateurs* and include the monographs of recent years on the great writers of the English motherland. Of these, John Morley's series of English Men of Letters has the merit, not only of compactness of form as well as of modest cost, but the special advantage of being written by literary specialists of eminence, of keen critical powers, trained judgment and, as a rule, fine qualities in writing English prose. Besides these may be mentioned such works as Trevelyan's *Life of Macaulay*, Froude's *Life of Carlyle*, Dowden's *Life of Shelley*, Forster's *Life of Dickens*, Stanley's *Life of Thomas Arnold*, Saintsbury's *Matthew Arnold*, Colonel Maurice's *Life of Frederick Denison Maurice*, Collingwood's *John Ruskin*, Harrison's *Tennyson, Mill and Ruskin*, Stopford Brooke's *Tennyson and His Art*, Prothero's *Life of Dean Stanley* and Leonard Huxley's *Life and Letters of Prof. T. H. Huxley.* A colossal undertaking also deserves to be noted — the 60 volumes of the *Dictionary of National Biography*, which has recently been completed under the editorship first of Leslie Stephen and finally of Sidney Lee.

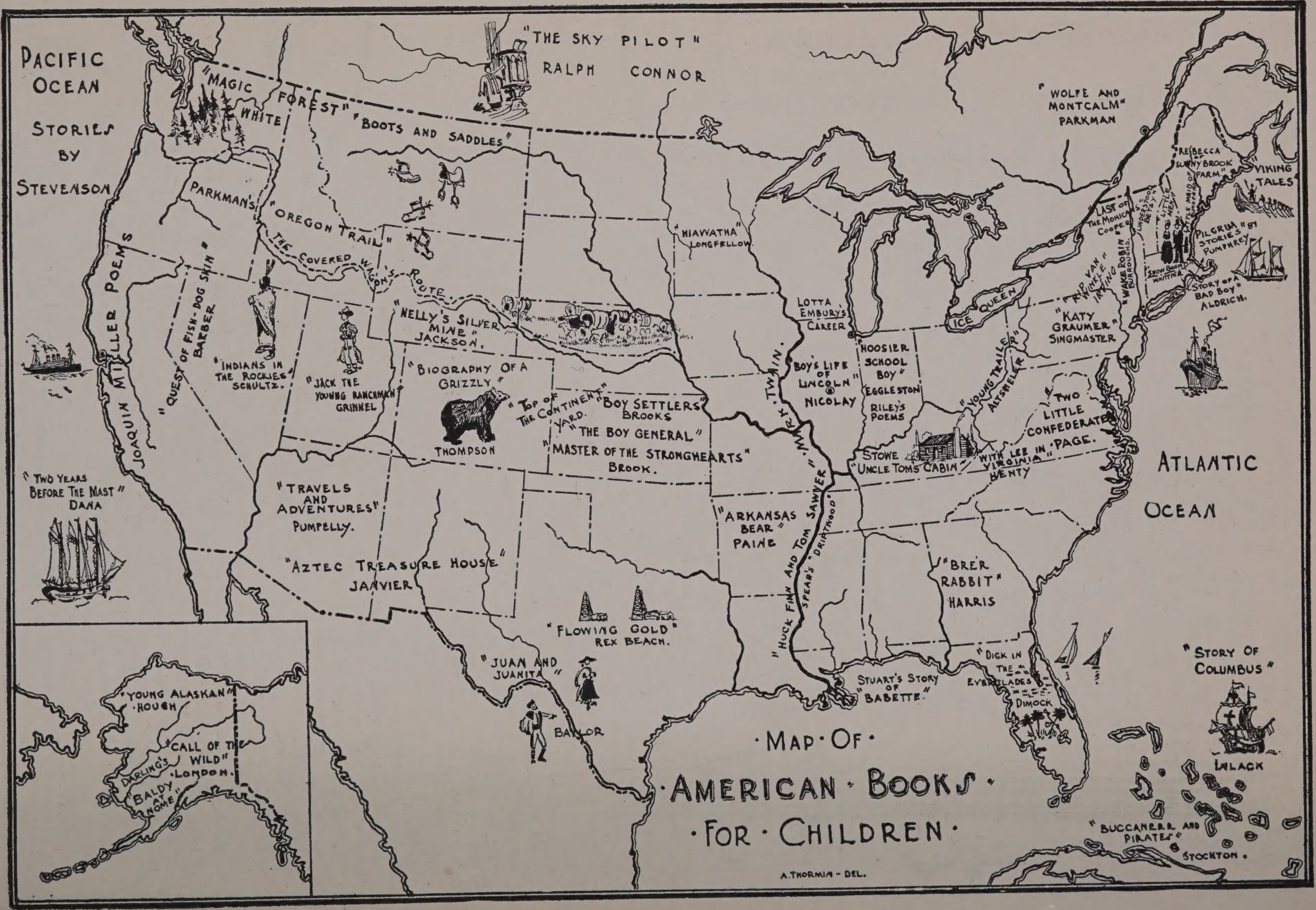
The transition is natural to the essay and the numberless writers in modern *belles-lettres.* The age is rich in workers here, especially in poetry, art and criticism. One of the sanest and most thoughtful of these critics was Richard Holt Hutton, the late editor of the London *Spectator*, who wrote largely and with earnestness on modern philosophical, literary and religious topics. To single out but one of his works we may mention *Criticisms on Contemporary Thought and Thinkers.* Another of these writers of eminence is George Saintsbury, professor of English literature at the University of Edinburgh. Besides his *History of Nineteenth Century Literature* (1790–1895), he has compiled an excellent collection of *Specimens of English Prose Style*, and written *Essays on English Literature* and a *Short History of French Literature.* Leslie Stephen was another able and competent critic, whose *Hours in a Library, Studies of a Biographer* and *History of English Thought in the Eighteenth Century* repay perusal. Frederic Harrison is yet another well-equipped writer, of the positivist school, whose *Victorian Literature*, study of *Oliver Cromwell*, *The New Calendar of Great Men*, *The Meaning of History* and inspiring *Choice of Books* are worthy of attention and study. Nor should Walter H. Pater's writings be overlooked, especially *Appreciations*, *Imaginary Portraits* and *Studies in the History of the Renaissance.* Important also are the *Essays and Addresses* by A. I. Balfour; as are also the writings of Benjamin Kidd on *Social Evolution*, *Principles of Western Civilization* and *Control of the Tropics.* The late Mrs. Oliphant was an industrious and interesting writer in general literature. Mark Pattison, Austin Dobson, A. C. Swinburne, Le Gallienne, Aubrey de Vere, Edmund Gosse, Augustine Birrell and versatile Andrew Lang are additional names among the instructive and delightful essayists. Even a brief reference must be made to writers in religious philosophy among English churchmen and others, who have done excellent as well as thoughtful work, and in apologetics, and have chronicled the trend of the great religious movements of the period. Especially have they done good work in their defense of theistic beliefs after the assaults of Darwinism and evolution. A few of these writers we mention with their chief works: James Martineau's *Religion as Affected by Modern Materialism* and *The Seat of Authority in Religion*; R. Flint's *Philosophy of History in Europe* and *Theism and anti-Theistic Theories;* John Caird's *Evolution of Religion;* A.M.Fairbairn's *Studies in the Philosophy of Religion and History* and *Religion in History and Modern Life;* Trench on *Miracles* and Whately on *Christian Evidences.* Here also may be chronicled Wilfrid Ward's *The Oxford Movement and the Catholic Revival* and Charles Gore's *Lux Mundi*, an attempt to harmonize High Churchism with advanced thought in modern science and biblical criticism. Other writers deserve brief mention, among them Dean Stanley who wrote the *Jewish Church* and *Church and State;* Robertson Smith on the *Old Testament in the Jewish Church* and *The Prophets of Israel;* Mandell Creighton on the *History of the Papacy during the Reformation*, *The Tudors and the Reformation* and *The Age of Elizabeth.* Dean Mansel's *Bampton Lectures*, Dean Farrar's *Early Days of Christianity*, *Life of Christ*, *Life and Work of St Paul* and *Witness of History to Christ* and Dr. William Smith's *Dictionary of the Bible*, *Dictionary of Christian Biography* and *Dictionary of Greek and Roman Antiquities* are additional works that merit notice.

The past half-century also was the era of the investigation of facts. Darwin, Lyell, Faraday, Tyndall and Huxley made science clear and charming. The great names in philosophy were Stewart, Brown, Mansel, Hamilton and Stuart Mill In philosophy the chief figure was Herbert Spencer, an author of ability, who wrote largely on evolutionary sociology, but more from the mechanical than from the moral side. Since Tennyson and Browning the poets have been mainly minor ones, including Edwin Arnold, Wm. Morris, the Rossettis, Kipling, Alfred Austin and Wm. Watson. See Henry Morley's *Short Sketch of English Literature*, John Morley's English Men of Letters Series, Stedman's *Victorian Poets*, Taine's *English Literature* and Mrs. Oliphant's *Victorian Age of English Literature.* G. M. A.

American Literature

Colonial literature (1607-1765) mainly is sources of history, not literature proper. In Virginia, though the first press was set up in 1681, it was soon suppressed, and nothing was printed before 1729. William and Mary College received its charter in 1693. Among the early Virginian books the most noteworthy were the *True Relation* (1608) and the *General History of Virginia* (1624) of famous Capt. John Smith. Others had a hand in the latter book, though passing under his name. The one early Virginian romance, the charming story of Pocohantas, is told by Smith. Other books of importance were the *Westover Manuscripts* of Col. William Byrd and the Virginian histories of Robert Berkeley and William Stith. A printing press was set up at Cambridge, Mass., in 1639. In 1636, only 16 years after the landing of the Pilgrims, Harvard College was founded and Yale in 1701. The first book printed in America north of Mexico was a collection of the Psalms in metre, *The Bay Psalm-Book* (1639–40). One of its chief editors was John Eliot, the Apostle to the Indians, who translated the Bible into the Algonquin language. The most important accounts of the settlement of New England are the journals of Governors Winthrop and Bradford. In the dry entries of Winthrop's *History of New England* are scattered the germs of much of the poetry and romance of Longfellow, Whittier and Hawthorne. But the book which best details the life and thought of old New England life is Cotton Mather's *Magnalia Christi Americana*, a mass of materials for the history of the colonial church. Mather wrote in the full style of Milton, overweighted with learning, puns, stories and italics. He took a leading part in the witchcraft trials, of which he gave an account in his *Wonders of the Invisible World.* The religion of New England was Calvinism, and its great expounder was Jonathan Edwards, a Massachusetts minister, president of Princeton College and one of the greatest thinkers America has produced. His masterpiece, *An Inquiry into the Freedom of the Will* (1754), attempts to reason Calvinistic doctrines out philosophically. His sermons, as was then common, were addressed to man's fear of God rather than to God's love for man, and his most famous sermon was *Sinners in the Hands of an Angry God.* This, however, showed but one side of his character; the kindlier is seen in


GEOGRAPHICAL-SETTINGS
- OF -
·AUTHORS·
- AND THEIR -
·WORKS·
OLIVER CURWOOD AND RALPH CONNOR
STORIES BY ROBERT LOUIS STEVENSON AND JOSEPH CONRAD
JACK LONDON
JOHN BARLEYCORN
"THE CALIFORNIANS" GERTRUDE ATHERTON
BRET HARTE'S NOVELS AND STORIES
STEWART EDWARD WHITE'S CAMPING GROUNDS
THE WORLD'S MOVING PICTURE SCENERY IS HERE
"THE GREAT DIVIDE"
HARRY LEON WILSON
RUGGLES OF RED GAP
WISTER'S "THE VIRGINIAN" AND "MEMBERS OF THE FAMILY"
HOUGH'S "THE COVERED WAGON"
HONORE WILLSIE'S "ENCHANTED CANYON"
WHITE'S "ARIZONA NIGHTS"
"MY ANTONIA" BY WILLA CATHER
"PRAIRIE FOLKS" GARLAND
R.F.D. No3 BY H. CROY.
WHITE'S EDITORIALS AND CERTAIN RICH MAN
DOROTHY CANFIELD FISHER "THE BENT TWIG"
"NORTH OF 36"
REX BEACH'S "FLOWING GOLD"
MARGARET WILSON'S "THE ABLE McLAUGHLINS"
HERBERT QUICK'S "THE HAWKEYE"
"SUCKOW'S COUNTRY PEOPLE"
SPOON RIVER ANTHOLOGY
THE CRISIS
MARK TWAIN
ZONA GALE "FRIENDSHIP VILLAGE"
MISS LULU BETT
WOOLSON'S "ANNE"
GARLAND'S SON OF THE MIDDLE BORDER
ADDAMS HULL HOUSE
FERBER'S "SO BIG"
BEN HECHT'S STORIES
WHITE'S "BLAZED TRAIL" & "RULES OF THE GAME"
"THE PIT" NORRIS
POEMS BY LINDSLEY
BOOTH TARKINGTON'S "GENTLEMAN FROM INDIANA" AND "ALICE ADAMS"
ALLEN'S "KENTUCKY CARDINAL"
COBB'S "JUDGE PRIEST"
SHERWOOD ANDERSON
"MOUNTAIN BLOOD" HERGESHEIMER
"HATCHER HUGHE'S "HELL-BENT FER HEAVEN"
"TIMROD'S "COTTON BOLL"
"DRYAD OF THE PINE" BY HAYNE
LANIER'S "MARSHES OF GLYNN"
CHATAHOOCHEE R
G.W. CABLE'S "OLD CREOLE DAYS"
"AMERICAN IMPRESSIONS" BY LAFCADIO HEARN
POE "THE GOLD BUG"
FRANKLIN'S AUTOBIOGRAPHY
DELAND'S "OLD CHESTER TALES"
KENNEDY SQUARE
E. WHARTON'S "OLD NEW YORK"
COOPER'S INDIAN STORIES
BACHELLER'S WOODS
"ICE-BOUND"
EMERSON'S ESSAYS
THOREAU "WALDEN"
LOWELL BIGLOW PAPERS
"STOVER AT YALE"
W.D. HOWELLS "SILAS LAPHAM"
"THE SCARLET LETTER" BY HAWTHORNE
"CONTEMPLATIONS" A. BRADSTREET.
J. LINCOLN'S SEA-COAST STORIES
IRVING'S "KNICKERBOCKER HISTORY"
O. HENRY'S "THE FOUR MILLION"
LONGFELLOW'S "EVANGELINE" IN NOVA-SCOTIA
COOPER'S "THE PILOT"
"ANNA CHRISTIE" BY EUGENE O'NEIL.
SHAKESPEARE'S "TEMPEST" IN BERMUDA ?
"BRIGHT SHAWL" BY HERGESHEIMER
BEACH LONDON SERVICE
"SHOOTING OF DAN McGREW"
"THE BARRIER"


·MAP·OF·
·AMERICAN·BOOKS·
·FOR·CHILDREN·
A. THORMIN - DEL.
PACIFIC OCEAN
STORIES BY STEVENSON
"TWO YEARS BEFORE THE MAST" DANA
JOAQUIN MILLER POEMS
"MAGIC FOREST" WHITE
"BOOTS AND SADDLES"
"THE SKY PILOT" RALPH CONNOR
PARKMAN'S "OREGON TRAIL"
THE COVERED WAGON'S ROUTE
"QUEST OF FISH-DOG SKIN" BARBER
"INDIANS IN THE ROCKIES" SCHULTZ.
"JACK THE YOUNG RANCHMAN" GRINNEL
"NELLY'S SILVER MINE" JACKSON.
"BIOGRAPHY OF A GRIZZLY" THOMPSON
"TOP OF THE CONTINENT" YARD.
"BOY SETTLERS" BROOKS
"THE BOY GENERAL"
"MASTER OF THE STRONGHEARTS" BROOK.
"TRAVELS AND ADVENTURES" PUMPELLY.
"AZTEC TREASURE HOUSE" JANVIER
"FLOWING GOLD" REX BEACH.
"JUAN AND JUANITA" BAYLOR
"HIAWATHA" LONGFELLOW
LOTTA EMBURY'S CAREER
"BOY'S LIFE OF LINCOLN" NICOLAY
HOOSIER SCHOOL BOY" EGGLESTON
RILEY'S POEMS
STOWE "UNCLE TOM'S CABIN"
"MARK TWAIN" "HUCK FINN AND TOM SAWYER"
SPEAR'S "DRIFTWOOD"
"ARKANSAS BEAR" PAINE
"BRER RABBIT" HARRIS
STUART'S STORY OF "BABETTE."
"DICK IN THE EVERGLADES" DIMOCK
"ICE QUEEN"
"YOUNG TRAILERS" ALTSHELER
"TWO LITTLE CONFEDERATES" PAGE.
"WITH LEE IN VIRGINIA" HENTY
"KATY GRAUMER" SINGMASTER
"RIP VAN WINKLE" IRVING
"WAKE ROBIN" BURROUGHS.
"LAST OF THE MOHICANS" COOPER
"UNDERSTOOD BETSY"
"LITTLE MEN"
"LITTLE MAID OF BUNKER HILL"
"REBECCA OF SUNNYBROOK FARM."
"VIKING TALES"
"PILGRIM STORIES" BY PUMPHREY
"SNOW BOUND" WHITTIER
"STORY OF A BAD BOY" ALDRICH.
"WOLFE AND MONTCALM" PARKMAN
ATLANTIC OCEAN
"STORY OF COLUMBUS" LALACK
"BUCCANEER AND PIRATES" STOCKTON.
"YOUNG ALASKAN" HOUGH
"CALL OF THE WILD" LONDON.
DARLING'S "BALDY OF NOME"

his *Treatise Concerning the Religious Affections.* Benjamin Franklin, of whom Turgot the French statesman said: "He snatched the thunderbolt from heaven and the scepter from tyrants," was the most useful of men. His bent was to the practical in his writings. *Poor Richard's Almanac*, begun in 1732 and maintained for 25 years, was filled with proverbs in prose and verse, teaching the value of work, honesty and economy: as "Three removes are as bad as a fire" and "Early to bed and early to rise make a man healthy, wealthy and wise." Next to the *Almanac* his most popular work was his *Autobiography*, but some of his lighter pieces, with their homely wisdom, are equally good, as the famous story of the *Whistle*, *Dialogue between Franklin and the Goat* and verses on *Paper*.

Literature from the Revolution to 1815 was mostly political. The fame of the speeches of Samuel Adams, James Otis and Josiah Quincy in Massachusetts and of Patrick Henry and Richard Henry Lee in Virginia comes to us mostly by tradition, though Patrick Henry's speeches are preserved at least in substance. The most famous is his speech in the convention of delegates ending with the well-known sentence: "I know not what course others may take, but as for me, give me liberty or give me death!" The political essays of such patriots as Adams, Otis, Quincy, Warren and Hastings, published in the newspapers, greatly helped the course of liberty. Among them were the *Circular Letter to Each Colonial Legislature* of Adams and Otis, Quincy's *Observations on the Boston Port-Bill* and Otis' *Rights of the British Colonies. The Declaration of Independence* is credited to Thomas Jefferson. Another noteworthy writing of his was his first *Inaugural Address.* His *Notes on Virginia* contain a fine description of the passage of the Potomac through the Blue Ridge. The great orator of the Federal party was Alexander Hamilton, whose finest speech perhaps is the one *On the Expediency of Adopting the Federal Constitution.* But the best thought of the Federal party is contained in the 85 papers, called *The Federalist*, written by Hamilton, John Jay and James Madison. The best known of Washington's writings is his *Farewell Address.* During John Adams' administration the best Federal orator was Fisher Ames, whose best speech was made in Congress in 1796 on the British treaty. Thomas Paine came to Philadelphia from England in 1774, and wrote his *Common Sense* and *Crisis* in aid of the colonial cause. His pamphlets were popular, easily understood by plain people, and did great service to the American cause. He afterwards went to France, where he wrote his *Rights of Man* and *The Age of Reason*, his best-known work.

The popular poem of Revolutionary times was John Trumbull's *McFingal*, a satire on the American loyalists or tories. Droll and genuinely humorous, it is one of the best American political satires. Many of its lines have become proverbs, as the couplet:

"No man e'er felt the halter draw
With good opinion of the law."

Joel Barlow, whose huge *Columbiad* is merely grandiose, wrote one piece of good humor, his *Hasty Pudding.* A number of ballads had wide circulation. *Yankee Doodle* was the outgrowth of the Revolution, the chorus being taken from an old Dutch song and first applied in derision to the colonists by British soldiers. A popular humorous ballad was *The Battle of the Kegs*, written by Francis Hopkinson, whose son Joseph wrote *Hail Columbia.* Much better than *Hail Columbia* is *The Star-Spangled Banner*, written during the British bombardment of Fort McHenry in 1812, by Francis Scott Key. The first real American poet was Philip Freneau, whose best poems are *Wild Honeysuckle*, *Indian Student* and *Indian Burying-Ground*, the last of which was highly praised by Sir Walter Scott. Another American to receive high praise abroad was John Woolman, a New Jersey Quaker, of whose *Journal* Charles Lamb wrote: "Get the writings of John Woolman by heart, and love the early Quakers."

The time between 1815 and 1837 has been called the era of good feeling. The Mississippi valley was being rapidly settled. "Westward the course of empire takes its way" expressed the feeling of the emigrants; and ideas of the greatness of America, such as the Revolutionary fathers had never imagined, were dawning upon men's minds. It was at this time, when Sydney Smith had sneeringly asked: "Who reads an American book?" that American literature of genuine worth began to be produced. The first of our writers whose books were read for their own sake, and not merely to find out about the men and times described, was Washington Irving. His *Sketch Book*, in some respects his best work, consists of tales, sketches and essays, two of which, the famous story of *Rip Van Winkle* and the legend of *Sleepy Hollow*, he wove from the old Dutch traditions of the Hudson. He used these traditions also in the book which gave him his reputation, *Knickerbocker's History of New York*, a burlesque account of the old Dutch settlers of New Amsterdam. This was a real addition to humorous literature. Irving's most ambitious work, his *Life of Washington*, remains an authority, but the most notable of his biographies is the *Life of Oliver Goldsmith.* Joseph Rodman Drake, a promising poet who died when he was only 25, wrote the best of our patriotic lyrics, *The American Flag*, while his *Culprit Fay* was the finest poem yet written in America, except Bryant's *Thanatopsis* (1816). A friend of Drake was Fitz-Greene Halleck, whose *Alnwick Castle* and especially his *Marco Bozzaris* will always be remembered.

James Fenimore Cooper was the first American novelist of note, as he still is the most widely read. His earliest success was *The Spy*, a tale of the Revolution. His sea-tales, the best of which are *The Pilot* and *The Red Rover*, are only rivaled, not surpassed, by those of Marryat and William Clark Russell. Cooper created the novel of the sea and of the backwoods; but in his stories of wild adventure in the wilderness he has no rivals. The hero of the famous *Leatherstocking Tales*, Natty Bumpo or Leatherstocking, the backwoods philosopher, is Cooper's finest character. Almost as good are his Indian characters, known to all America and Europe, Chingachgook, Uncas, Hist and the Huron warriors. A number of single poems written at this period have kept their popularity, as John Howard Payne's *Home, Sweet Home*, Samuel Woodworth's *The Old Oaken Bucket*, Richard Henry Wilde's *My Life is Like the Summer Rose* and Albert Gorton Greene's *Old Grimes*. The senate was made illustrious by the speeches of Clay, Webster and Calhoun. Calhoun was greater as a debater than as an orator. Clay's speeches depended so much for their effect on his voice and personality that the mere reading of them reveals only the smoldering embers of the fire once there. With Daniel Webster, perhaps the greatest of English-speaking orators, the case is different. Webster's great underlying thought was the Union, and the power and passion with which this thought is expressed in his speeches made them lasting literature. Rufus Choate perhaps ranks next to Webster, while Edward Everett's speeches are more polished than powerful. William Ellery Channing gave his time and thought to the Unitarian movement in Massachusetts, of which he was the head; but his critical essays on *John Milton* and *Napoleon Bonaparte* rank high.

The movement in Massachusetts, known as transcendentalism, which by-and-large was the ideal philosophy of Kant applied to religion, nature and life, is related to literature in that to it we owe not only its leaders, Emerson and Thoreau, but in great measure Hawthorne, Lowell, Whittier and Holmes, the leading writers from 1837 to the Civil War. The center of the movement was Concord, where was published *The Dial*, which contained some of the best prose and poetry published in America. Emerson's views are set forth in *Nature* and his address on the *American Scholar*, but he will be longest remembered by his *Essays*, his published lectures, *Conduct of Life*, *Society and Solitude* and *Representative Men*, writings which are rich and striking and teach a high morality. Thoreau, the poet-naturalist, wrote of nature as no one else had then done. Among his books are *Walden*, *Cape Cod*, *A Yankee in Canada* and *Maine Woods*. Hawthorne, the greatest American novelist, wrote *Mosses from an Old Manse*, a collection of stories, as was also his first important venture, *Twice-Told Tales*. His greatest book is *The Scarlet Letter*, with quiet and fine humor, grasp of human nature and a powerful story, whose background is the somber life of the early settlers of New England. *The House of the Seven Gables* is almost equally good. Besides these and his *Notebooks*, *Marble Faun* and *The Blithedale Romance*, Hawthorne wrote two first-class children's books, *The Wonder-Book* and *Tanglewood Tales*. Harvard College, as well as Concord, was a center of literature. Longfellow, though not one of its graduates, was identified with Cambridge for over 50 years. His first prominence came from *Voices of the Night* (1839). Some of the pieces in this collection are as fine as any he afterwards wrote — as *Hymn to Night*, *The Reaper and the Flowers* and *The Beleaguered City*. Others of his smaller pieces are the fine ballads of *The Skeleton in Armor*, *The Wreck of the Hesperus* *Seaweed*, *The Old Clock on the Stair* and *The Building of the Ship*. *Evangeline*, the story of an Acadian peasant-girl, appeared in 1847. *Hiawatha*, the most original of Longfellow's poems, came out in 1856. Longfellow is the most widely read of any American poet — one reason being that he wrote for the home; and it would be hard to overstate the influence for good of his writings. Hundreds of thousands of copies of them have been sold in America and England.

Oliver Wendell Holmes' well-known ballad of *Old Ironsides* first gained him notice. Most of his poetry is humorous, and of the finest; as *Rip Van Winkle, M. D.*, *The Boys* and *The One-Hoss Shay*. Some pieces, though, are pathetic as well as humorous, as *The Last Leaf*, which Abraham Lincoln called "inexpressibly touching;" or exquisitely beautiful, as *The Chambered Nautilus*. His masterpiece, however, is his table-talk, *The Autocrat at the Breakfast Table*, in which Holmes put the best of his humor, satire and sense. Lowell, besides being one of our leading poets and perhaps the greatest American critic, was a native of Cambridge. His popularity came with the appearance of *The Biglow Papers* (1846), rhymed satires on the government in its conduct of the Mexican War and in Yankee dialect. A second series came out during the Civil War. His critical papers, which took high rank, appeared as *Among My Books*, *My Study Windows*, and in other titles. The oldest of our leading historians was Prescott, who, in spite of being almost blind, entertained the world with brilliantly tinted histories of the *Reign of Ferdinand and Isabella*, the *Conquest of Mexico*, and the *Conquest of Peru*. George Bancroft spent over half a century on his *History of the United States*, which comes down only to 1789, but is written with a thoroughness that leaves nothing to be desired. He supplemented it with a volume on the federal constitution. Our greatest historians are

Motley, Parkman and Fiske; Motley's *Rise of the Dutch Republic, History of the United Netherlands* and *Life of John of Barneveldt* tell the story of the Netherlands with the brilliancy of Prescott, while the leading characters are painted with a far more masterly hand. Parkman's *A Half Century of Conflict* (1892) is the seventh and last of his invaluable series of histories entitled *France and England in North America.* His *Oregon Trail* sketched his adventures when, fresh from Harvard, he visited the far west. His *Conspiracy of Pontiac* reads more like a novel than a history. Among the later historians we must include such writers as Capt. A. T. Mahan, who has contributed much on the naval history of the nation and on *The Influence of Sea-Power upon History*, besides biographies of Admiral Farragut and Lord Nelson; Benjamin Lossing, who wrote interestingly on the War of Independence, the War of 1812 and the Civil War; Henry Adams, who is well-known by his *History of the United States* in the early years of the 19th century, *Documents relating to New England Federalism, Historical Essay* and lives of *Albert Gallatin* and *John Randolph;* E. Benj. Andrews, who, besides his *Brief Institutes of General* and of *Constitutional History*, has written two *Histories of the United States*, the later one dealing with the last quarter-century; Albert Bushnell Hart, familiar to students of American political history by his *American Government, The Formation of the Union* and *The Foundations of American Foreign Policy;* the late John Hay, who in addition to poems and essays gave us, in association with John G. Nicolay, an important history of the United States between 1830 and 1865 in the *Life of Abraham Lincoln;* A. H. Stephens, known by his *War between the States;* and James Schouler, whose legal and historical work is familiar to students of American letters and to investigators of American history and biography.

The two leading orators of the antislavery cause, Wendell Phillips and Charles Sumner, were both Harvard graduates. Phillips was one of our greatest speakers, simple and impassioned. One of his best speeches was made in Faneuil Hall, Boston, on the murder of Lovejoy the abolitionist. Among Sumner's best orations were *The Kansas-Nebraska Bill* and *The True Grandeur of Nations.*

Good literature was also written in the cities. Bryant wrote much of his poetry in New York. (*Thanatopsis* was written while a sophomore at Williams College). Much of his best work was done in writing of nature; such poems are *Green River, Death of the Flowers* and the song, *O Fairest of the Rural Maids.* Though writing throughout a long life his work varied little, his later poems, as *The Flood of Years*, being as fresh as his youthful pieces. Whittier is a rival of Bryant and Lowell for first place among our poets. Hardly anything could be more martial than the war-hymns of the Quaker poet, as *Voices of Freedom* and *In War Time; Barbara Frietchie, Maud Muller* and *Skipper Ireson's Ride* are as popular as anything he wrote. *The Tent on the Beach* and *The Bridal of Pennacook* are among his ballads. The worth of Poe as poet and storyteller is becoming more and more recognized. *The Raven* is his most read poem. *Annabel Lee* is one of the finest ballads in the language. Others of his best pieces are *Ulalume, The Valley of Unrest, The City in the Sea, Israfel* and *The Sleeper. Ligeia* perhaps is his most powerful tale. *The Gold Bug, The Mystery of Marie Roget* and others are rivaled only by Gaboriau's tales as detective stories, while for sheer terror nothing can approach *The Cask of Amontillado* or *The Red Death*, though better than either is *The Fall of the House of Usher.* Some of Willis' tales, as *The Ghost-Ball at Congress Hall*, and poems like *Unseen Spirits* will not be forgotten Bayard Taylor's fine rendering of Goethe's *Faust* is better than any of his original writings. Thomas Buchanan Read is remembered for his *Pons Maximus, Sheridan's Ride, Deserted Road* and *Drifting.*

More, perhaps, than Garrison, Phillips, Sumner, Whittier or Lowell did Mrs. Harriet Beecher Stowe, through *Uncle Tom's Cabin*, do to rouse America against slavery. The sale of the book by the hundred thousand and its translation into over 40 languages made it the most popular novel written in America. Walt Whitman held a peculiar place, in that there was no agreement as to his ability. By some he was styled the greatest of American poets; others allege that his poems are merely bad prose. His most popular poem, *My Captain*, was written after the assassination of Lincoln. He, however, is best known by his *Leaves of Grass.*

The Civil War brought out many ballads and songs, the best of which was Julia Ward Howe's *Battle-Hymn of the Republic.* The death of Sidney Lanier, who wrote *The Mocking Bird* and *The Song of the Chattahoochee*, robbed the south of a great poet. Samuel L. Clemens (Mark Twain), who stands as the best exponent of American humor, has produced work of genuine interest, though his reputation as a humorist interfered somewhat with the reception of his admirable biography of *Joan of Arc.* Of interest also are the quieter fun of Frank Stockton and the inimitable sketches of western life given by Bret Harte in tales like *The Luck of Roaring Camp.* Worthy of mention are Hale's *Man without a Country* and Eggleston's *Hoosier Schoolmaster.*

Recent Literature (since 1865). The characteristic fact of the later period is its wide range, even to the extent of diffuseness. There are some who see in the new era, with its widening and broadening of American thought in literary expression, a sensible loss of power and a dearth of original creative work in the more important departments. But this is hardly a just view of the age and its work, which has been one of ceaseless literary activity and a high order of production; though in the more serious studies there has, admittedly, been a lack of laborers who have attained high eminence and whose writings might have made the epoch preeminently rich in its intellectual possessions. If we except the novel and practical science, the gains of the later time have not been so great as to mark the new literary product with distinction and overshadow the era which we naturally expected it to supplant. At successive periods we must look for the ebb and flow of the literary tide, as the world is orphaned by the hushing of its older and masterful voices and again sired by the coming of new aspirants for literary honor and historic fame. That there has been more than this interregnum between the old and the new era we do not admit; nor is the characteristic of it, in comparison with a former age, by any means disadvantageous to the later time. What the earlier era had to its credit was a period of greater repose, when the voices that then arose in the literary world of our continent had a more attentive and responsive audience, undistracted by the clamor of a hurrying, distraught, preoccupied time. Work wrought by minds gifted with genius is rare in any age; but in our day genius has not altogether been lacking, nor have we been without books that inspire as well as instruct — books that delight and even enchain. The product, nevertheless, is comparatively small in weighty and serious studies; though, until the new era has been well-ushered in and the new writers have put the coping-stone on their achievements, no fair appraisement can be made of their abilities or of the place that contemporary writers are likely to hold in literature. One advantage the era has gained over that past is manifest in the protection which international copyright has given to writers by supplying them with a remunerative market on both sides of the Atlantic, with the stimulus which this practically affords to those who have taken, or may yet take, advantage of it. That this has been helpful to the literary product goes without saying; while the extended market has made bookpublishing less precarious, and, with the improvement in critical taste on the part of publishers and readers, has been highly and unexceptionably beneficial.

In the new era we have been especially under the reign of the novelist and the novel. Legitimate history has seemed to suffer in this respect, for, if we except a few notable achievements and the issue of the ordinary historical text-book, history proper has been but sparingly written, save in the guise and with the trickings out of fiction. Considering the indifference of the masses toward historic annals, this may not be without its compensations, though at times it may be perilous to truth to accept sober history in the bedizened attire of the alluring and picturesque novel. Much depends upon the writer and the extent of his historical equipment, as well as on the fidelity of the history and portraiture of the period with which he deals. The more eminent writers of fiction are notably careful in their methods and are, in the main, true to fact in their pictures of it, while their art contributes greatly to the interest with which they invest the time. This is especially so in the case of many novelists who have won fame and have wrought with wonderful skill and fidelity to fact in historical fiction. The names of a few of the more prominent of these historical romancers will readily occur to the reader. It would be no uninteresting study to point out with what success each has striven to interpret the romantic element in American history and to present, with vivid reality, characteristic pictures of the local life and environment of the various regions, settled and unsettled, of the continent. Of colonial Virginia, Mary Johnston has in *Prisoners of Hope*, *To Have and to Hold* and *Audrey* given realistic pictures in the beginning and middle of the 17th century. The field of Mary Hartwell Catherwood's romances has been mainly that of New France, though she has also exploited the south, especially in *Old Kaskaskia* and *The Story of Tonti.* The best of her novels that deal with early French-Canadian history is *The Romance of Dollard.* In *Hugh Wynne*, by the distinguished Philadelphia physician, poet and novelist, S. Weir Mitchell, we have an enthralling study of old colonial days preceding and during the War of the Revolution. It is especially interesting as a picture of the social life of Philadelphia, with its admixture of Tory, Whig and Quaker elements at the time of the British occupation. In his *Adventures of François* Dr. Mitchell has written an engaging story — the fictional memoirs of a foundling, choir-boy, thief, juggler and fencing-master during the French Revolution, a study which lightens the gloom of an era of hideous carnage. *Characteristics*, *Circumstance* and *When All the Woods Are Green* are others of his entertaining stories. In *Alice of Old Vincennes* Maurice Thompson wrote a strong story of the era of the French settlement of Indiana. With this class, also, belong *Richard Carvel*, a dramatic picture of Revolutionary days by Winston Churchill, and *The Crisis*, where we enter the scenes of the Civil War, made impressive by the figure of Lincoln, with glimpses from the southern point of view. *When Knighthood Was in Flower*, an English romance, by Charles Major, and *Janice Meredith*, a story of the Revolution, by Paul Leicester Ford, attained wide but brief popularity, Mr. Ford's book proving a disappointment to many who had read his admirable novel, *The Hon. Peter Stirling* and the charmingly original *Story of an Untold Love.* James Lane Allen remains true to his first love, his former Kentucky home and environment, where he won abiding fame by *A Kentucky Cardinal* and his inimitable sketches, as *The Blue-Grass Region of Kentucky, Aftermath, Summer in Arcady* and his thoughtful, poetic *The Choir Invisible.* Marion Crawford is a cosmopolitan, and only through his mother and by virtue of his early childhood, spent in New York, can we claim him as an American. We owe much, nevertheless, to his cultured and tireless pen for many novels about Italy. *Saracinesca, Sant' Ilario, Don Orsino* and *A Roman Singer* are the chief, and among his best. In *Katharine Lauderdale* and its sequel *The Ralstons,* with *Marion Darche* and *The Three Fates,* we have stories of American life, and in these there is much of merit and entertainment, though he is more at home in describing European, especially Italian, life.

Among American writers who are winning lasting names are Henry James, William Dean Howells and George W. Cable. Mr. James, the subtlest and most realistic of American novelists, has much of achievement, though he is lacking in the elements of popularity. He has, however, done much clever work in fiction, and manifested a high degree of art. His more notable stories are *Roderick Hudson, Daisy Miller, The American, The Europeans, What Maisie Knew, The Princess Casamassima, The Portrait of a Lady* and *The Awkward Age.* Mr. Howells has done much good and varied work, and the American world of letters owes him a heavy debt. He is essentially American in his ideals and tastes, and is always the artist. His most representative novel is *The Rise of Silas Lapham,* though we prefer his earlier and less realistic stories, as *A Foregone Conclusion* and *A Chance Acquaintance.* Mr. Cable is best known for his delightful pictures of Creole days, drawn with a pen skillful in catching the finest, most delicate traits of Creole character and preserved in such stories as *Old Creole Days, The Grandissimes* and *Madame Delphine.* In *The Cavalier* he has left his chosen field, but not added to his fame. As a writer of the short story, Mary E. Wilkins holds high place. Her art is always delicate and her workmanship at times exquisite. Her more notable books are *A New England Nun, A Humble Romance, Pembroke* and *Giles Corey, Yeoman.* Sarah Orne Jewett has an industrious and clever pen, and has done much excellent work from *Deephaven* to *The Tory Lover.* Mrs. Burton Harrison is a successful writer of society novels. She has culture, and has seen the world and its many and varied types. Her most interesting stories are *The Anglomaniacs, Good Americans, A Son of the Old Dominion, A Triple Entanglement* and *A Princess of the Hills.* The author of *That Lass o' Lowrie's* and *Little Lord Fauntleroy* (Mrs. Frances Hodgson Burnett) continues to add to her fame and to address cosmopolitan tastes. *A Lady of Quality, His Grace of Ormonde* and *The Making of a Marchioness* are, with her plays, examples of her work. Gertrude Atherton did promising work in *The Doomswoman* and *The Californians,* and evinced skill in portraiture in *The Aristocrats.* Kate Douglas Wiggin (Mrs. Riggs) is at her best in such tales as *Marm Lisa, Penelope's Progress* and *A Cathedral Courtship.* Adeline D. T. Whitney was always sure of readers, especially young girls, in her delightful stories of the type of *Faith Gartney's Girlhood, We Girls* and *Real Folks.* The work of Miss Murfree ("Charles Egbert Craddock") is strong, vigorous and dramatic. The mountain country of Tennessee she has made highly interesting by her pictorial descriptions and studies of character. Her best-known stories are *In the Tennessee Mountains, In the Clouds* and *The Prophet of the Great Smoky Mountains.* To these writers have to be added the names of others who have done good, often notable, work as novelists and writers of short stories, many of them also being known as poets and essayists of repute. These include Julian Hawthorne, T. B. Aldrich, A. S. Hardy, Susan Warner, Edgar Fawcett, "Octave Thanet" (Alice French), J. G. Holland, Harriet P. Spofford, E. Stuart Phelps Ward, J. T. Trowbridge, Helen Hunt Jackson and Hamlin Garland. Of poets and *litterateurs* the modern period enrolls the names, high in their art, of such writers as Geo. W. Curtis, E. C. Stedman, R. W. Gilder, R. H. Stoddard, Alice and Phœbe Cary, Lucy Larcom and P. H. Hayne.

Among other successes in American fiction must be noted such writers as Irving Bacheller, Judge Robert Grant, C. F. Goss and Edward Noyes Westcott. Mr. Bacheller's success is recent, but it is gratifying as well as emphatic, as is witnessed by *Eben Holden* and *D'ri and I.* The stories are new creations in fiction, and have a freshness that must be enjoyed by jaded novel readers. They are admirable in character-drawing, and bracing and wholesome fiction. Judge Grant has done much clever work, especially in his skillful picture of contemporary American life, entitled *Unleavened Bread. The Redemption of David Corson* by C. F. Goss and *David Harum* by the late E. N. Westcott have been read by multitudes, and in many respects have earned success, as has the late Stephen Crane's *Red Badge of Courage* and *Wounds in the Rain.* A new writer, Dr. J. B. Naylor, has in *Ralph Marlowe* interestingly described village life in southeastern Ohio, and amusingly sketched, and to the life, one of its garrulous rustic characters. From the same pen we have *The Sign of the Prophet,* a bright romance of the War of 1812, the heroine of which is a ward of Tenskwatawa, the Shawnee prophet and brother of Tecumseh.

Other notable fiction has come from the pen of Hamlin Garland, the Wisconsin poet and novelist, who has given us *Rose of Dutcher's Coolly* and *Her Mountain Lover;* from G. C. Eggleston, in *A Carolina Cavalier;* from Gen. Lew Wallace in *Ben Hur;* from T. Nelson Page in *Red Rock;* and from Booth Tarkington in *The Gentleman from Indiana.*

The lighter literature of the period has so occupied us that a closing paragraph must suffice for the enumeration of a few writers among the many who have dealt with weightier themes. This can hardly, however, be deemed a slight, as those writers and their works are, for the most part, referred to in biographical articles under the authors' names. The sources of information in literary biography are, moreover, now so many and so readily accessible, that the consulter of these pages will do better to refer to the separate monographs, especially to the monumental *Library of the World's Best Literature* edited by Charles Dudley Warner — the most comprehensive source-book of literary biography which the era has produced. Other useful material will be found in Charles Dudley Warner's American Men of Letters Series, J. T. Morse, Jr.'s American Statesmen Series, H E. Scudder's American Commonwealth Series and in the works of such American writers as Carl Schurz, Henry Cabot Lodge, J. B. McMaster, Moses Coit Tyler, W. M. Sloane, J. T. Morse, Jr., James Ford Rhodes, Hamlin Garland and the late Justin Winsor and James Parton. In American history, especially in its early and romantic beginnings, the writings of the late John Fiske should also be consulted, for the era produced no abler or more philosophic historian or more thoughtful writer in religious philosophy. Akin in interest to the historians are the publicists who have dealt with current problems of government and with questions arising from territorial expansion and national issues, including economics, education and racial problems. The war with Spain brought forth a literature of its own, dealing with both arms of the service and with the status and future civil administration of our extracontinental possessions. Not the least interesting figure among the writers on these subjects is Theodore Roosevelt — the stalwart campaigner, sportsman, "Rough Rider" and president — who, moreover, is to be included among the thoughtful contributors to recent literature, his productions embracing *The Winning of the West*, *American Ideals*, *History of the Naval War of* 1812 and lives of *Gouverneur Morris* and *Oliver Cromwell*, besides his sporting adventures. G. M. A.

Lit'erature for Children. In recent years there has grown up a large demand for books and general literature suitable for children. A great variety of such books has been produced and would be sufficient, if brought together, to make a good-sized library. There has thus developed a distinct body of literature, belonging to the various stages of childhood and youth and somewhat definitely marked off from the literature designed for adult minds. Many of these books are poor and trifling, others are choice in thought and style and are highly educative in their effect. It requires considerable special knowledge and experience to select the books of most value and best adapted to children from this great mass and variety of materials. Parents especially find it difficult to keep track of the choice books, and even teachers, with their larger experiences in literature, history and science, often are unqualified to make a good selection for children.

We will first briefly summarize and classify the principal kinds of books.

The books of early childhood include such as the Mother Goose stories, Stevenson's poems of early childhood, Eugene Field's poems and other illustrated poems and tales. Fairy-tales and folk-lore, including Grimm's and Andersen's, follow closely, and then the whole series of myths from Hiawatha and other Indian tales back to the Norse and Greek myths Old English story is rich in ballads and songs of delight to children. The legendary stories of early Roman history, Siegfried, Roland and many early and medieval tales from the history of Germany, France and Italy, William Tell, the accounts of King Arthur and the Round Table knights, the patriarchal stories from the Bible and legendary stories of French, German and English kings furnish a rich variety of interesting narratives for the young. Frederick Barbarossa, King Alfred, Charlemagne, Robert Bruce and Sir William Wallace and many other stories may be cited. Some of the standard books dealing with these stories are Grimm's *Fairy Tales*, Andersen's *Fairy Tales*, Hawthorne's *Wonder-Book* and *Tanglewood Tales*, Kingsley's *Greek Heroes*, *King Arthur and His Court* (Greene), *Old Testament Stories in Scriptural Language*, Peabody's *Old Greek Folk-Stories*, the *Eugene Field Book*, Stevenson's *Book of Poems*, *Norse Stories* (Mabie), *Myths of Northern Lands*, *Hiawatha*, *Lays of Ancient Rome* (Macaulay), *Tales from English History*, *Heroic Ballads*, *Stories from Herodotus*, *Jason's Quest* (Lowell), *Tales of Chivalry* (Rolfe), *The Boy's King Arthur* (Lanier), *The Story of Siegfried* (Baldwin), *The Story of Troy*, *The Story of Roland* (Baldwin) and Church's stories of *The Iliad* and *The Odyssey*

The best of these legends and stories are selected from the early history and literature of modern European countries and from Greek, Roman and Hebrew civilization Many have been translated or adapted for modern use from the old literatures. Belonging also to the earlier and middle period of childhood, from 10 to 12, are such stories as *Gulliver's Travels* (Swift), *The Arabian Nights*, *The Nürnberg Stove* (Ramée), *Alice's Adventures in Wonderland* and *Through the Looking Glass* (Carroll), *Black Beauty*, *Little Lord Fauntleroy* (Burnett), *Being a Boy* (Warner), *The Story of a Bad Boy* (Aldrich), *The Robin Hood Stories* (Pyle), *Tales of a Traveller* (Irving), *King of the Golden River* (Ruskin), *The Water-Babies* (Kingsley), *The Pied Piper of Hamlin* (Browning), *Ten Boys on the Road from Long Ago* (Andrews) and *The Story of the English* (Guerber).

From 11 on, some of the simple biographies are interesting to children, as of John Smith, Boone, Miles Standish, Lincoln, Washington, La Salle, William Penn, Benjamin Franklin, Peter the Great, King Alfred, Cæsar, Cromwell and others.

During the grammar-school period children become interested in such books as *Tales from Shakespeare* (Lamb), Irving's *Stories*, *Vicar of Wakefield*, *Pilgrim's Progress*, *Swiss Family Robinson*, *Last of the Mohicans*, *Evangeline*, *Tales of a Grandfather*, Plutarch's *Lives*, *Silas Marner*, *Tom Brown's School-Days*, Franklin's *Autobiography*, *Uncle Tom's Cabin*, *Merchant of Venice*, *Roger de Coverly*, *Lady of the Lake*, *Don Quixote*, *Rob Roy*, *Treasure Island*, *Peasant and Prince*, Scudder's *Life of Washington*, *The Talisman*, *Ivanhoe* and *The Deserted Village*.

Then comes a large series of books of travel and adventure, geographical descriptions and excursions, stories of hunting and fishing, voyages of exploration and discovery, which make a good share of a library for boys and girls. Such are Livingstone's and Stanley's experiences in Africa, the ocean-explorers, as Columbus, Da Gama, Magellan, Sir Francis Drake and Captain Cook; Arctic explorers, as Nansen; pioneer explorers in America, as Champlain, De Soto, Lewis and Clark and Fremont.

More recently there has come into use a body of nature-stories and science-books which are of much importance, as Burrough's *Birds and Bees*, *Squirrels and Other Fur-Bearing Animals*, *Bird Land* (Keyser), *Krag and Johnny Bear* (Seton), *The Foot-Path Way* (Torey), *Three Outdoor Papers* (Higginson), *Stories of Bird Life* (Pearson), *The First Book of Birds* and *Birds Through an Opera Glass* (Olive Thorne Miller), *Nestlings in Forest and Marsh* (Wheelock), *Town Geology* and *Madame How and Lady Why* (Kingsley), *Starland* (Ball), *Natural History of Selborne* (White), *Secrets of the Woods* (Long) and *Familiar Flowers of Field and Garden* (Mathews).

In addition may be mentioned humorous stories, as *How I Killed a Bear* (Warner), *Tom Sawyer and Huckleberry Finn* (Twain), *The Rose and the Ring* (Thackeray), *The Story of a Bad Boy* (Aldrich), *The Adventures of Robin Hood* (Pyle) and *Little Masterpieces of American Wit and Humor* (Masson).

Intelligent parents are becoming aware of the importance of selecting the best books for children and of not only putting these books where children may find them but of reading to the children. Mothers, fathers, older brothers and sisters or aunts cannot entertain and benefit the children so much in any other way as by reading the best stories to them. This should begin before children are old enough to go to school. Between four and six is the choice time, in many respects, to introduce children to the best stories and ballads. Their minds are remarkably receptive to good stories at this period, and the thought and language of children can be thus early shaped and directed into the best channels. Thoughtful mothers who can get time for this delightful study with their children find it most valuable to all concerned and a real pleasure.

As children grow a little older, the reading of good books in the family circle, where old and young alike may enjoy them together, is perhaps the best way of developing the right family spirit and at the same time cultivating and enriching the minds of young and old. For this reason a well-selected family library is very helpful. Some of our city and town libraries now provide a children's room where a full set of children's books is supplied. In some cases a lady is employed to read to classes of boys and girls, introducing them in an interesting way to the better class of books.

In common schools the entire method of treating books and literature has undergone a great change in recent years. The oral treatment of stories in primary grades has developed into an elaborate plan of introducing the best stories and literary products to children, in order thus to give them an early and vivid acquaintance with authors and their works. Primary teachers have been developing the art of *storytelling*, including clear and attractive narrative, impersonation of characters, dramatic action of a simple kind, question, answer and discussion and, finally, careful reproduction of stories by the children. This kind of work has vitalized primary instruction, awakened the interests and thought activity of children, and exerted excellent influence in improving the language and composition of pupils. It has laid the foundation in primary grades for a real educative acquaintance with several standard classes of literature which may grow and develop later. This oral acquaintance with firstclass stories and myths also has a close relation to the labor of learning to read in primary schools. It plants in the children the desire to learn the art of reading, and it lends enthusiasm and natural expression to all later oral reading. The mechanical formalism and monotony so common among children in learning to read are due largely to the lack of thought and interest in what they are reading; in short to a deficiency of such stimulating ideas as children appropriate richly through oral story and work.

As soon as children have learned to read in primary grades and have acquired a strong interest and preference for suitable books, the later reading in schools, from the fourth grade on, is designed to cultivate and develop this lively interest in the best standard works in literature still further. Instead of the series of regular readers, many of the schools are in the habit of requiring the reading of good English classics in the intermediate and grammar grades. Such series of unabbreviated English classics are now published for school use by most of the large publishing companies, including such books as Longfellow's *Evangeline* and *Courtship of Miles Standish*, Irving's *Rip Van Winkle* and *Sleepy Hollow*, Whittier's *Snowbound*, Lowell's *Vision of Sir Launfal*, Matthew Arnold's *Sohrab and Rustum*, Scott's *Marmion* and *Lady of the Lake*, Shakespeare's *Merchant of Venice* and *Julius Cæsar*, Lamb's *Tales from Shakespeare*, Webster's *Speech at Bunker Hill*, Motley's *Essay on Peter the Great*, Schurz's *Essay on Lincoln* and Hawthorne's *Tales of the White Hills*.

The study of masterpieces as units of thought has introduced into the common school a new and improved method of reading and interpreting literature Reading in grammar grades is no longer a mere drill in enunciation, pronunciation and rhetorical expression. It has become a fruitful and many-sided thought-study, an awakening of deep and lasting interest in the works of great writers and in the great writers themselves as leaders of thought. The very methods of instruction have changed. The teacher herself needs to have an appreciative and sympathetic acquaintance with classic works and an enthusiasm for the study of them. Boys and girls have their attention directed first of all to the growth of a strong idea in a masterpiece and to the author's style and power in expressing it. The characters depicted by the author are worked out in their proper setting and relation to environment. Great moral principles come to light, and ideals of personal conduct are set up, or contrasts are shown between right and wrong action. In other words, it becomes a deep and interesting study of human life as revealed by great writers. Such an inspiring study may then well lead to natural and expressive reading.

It is not unusual to dramatize some of the suitable works and present them on the school-stage, especially those which already are in the dramatic form, as Shakespeare's *Julius Cæsar*, *The Courtship of Miles Standish* and others.

Another field to which it is the business of the school and home to introduce children is that which belongs to periodical magazines, newspapers and the current literature of periodicals. Children need, on the part of elders, first of all, a wise choice of the best of these productions and, second, a considerate encouragement to read those which deserve attention.

The home has the best opportunity of directing the tastes of children by reading with them. The school can call attention to the best magazines, furnishing them in the school-library, and in the discussion of current events directing the attention of pupils to those periodicals which give a simple and interesting discussion of political, scientific, social and practical topics. Even the daily newspapers require attention; young people should be shown how to read and judge them, and should then be led to appreciate the better class of dailies.

One of the peculiar characteristics of our civilization is this increasing importance of literature in the education of the young. It has grown to large proportions in the last 30 years. Side by side with good and wholesome literature is a great mass of false and vicious books and periodicals which pander to a depraved taste and to vicious thoughts and impulses. It is the duty of the school and home to forestall these bad influences by the steady forces of education, begun early and kept up continuously through all the years of youth.

Some of the books dealing with this problem are *Literature in Schools* (Scudder); *How to Teach Reading* (Clark); *Counsel upon the Reading of Books* (Van Dyke); *The Study and Teaching of English* (Chubb); *The Story-Teller's Art* (Dye); *Books and Reading* (Lowell); *Special Method in Primary Reading* and *Oral Work with Stories* (McMurry); *Special Method in the Reading of English Classics* (McMurry); *The Book-Lover* (Baldwin); *Place of the Story in Early Education* (Wiltse) and *The Listening Child* (Thacher).

C. A. McMurry.

Lithog'raphy, the art of printing from stone. Chalky stones, as limestone absorb grease and water readily. If a greasy line is drawn on a prepared stone, this line can be removed only by taking away the surface so far as the grease has penetrated. If water is put on this prepared stone after the greased line has been drawn, the water remains on those parts not covered with the grease. If a roller covered with greasy ink is passed over the stone, the ink will cover the greased portions, and the parts wet with water will repel the ink and remain clean. If a piece of paper is now put on the stone, it will receive an impression in ink of the greasy line. These are the elements of lithographic printing.

The art was invented by Senefelder in 1796. In 1800 he patented his invention in Bavaria, most of the German states and Austria. His establishments in London and Paris did not do well for the new art was guarded with such secrecy and jealousy as to retard progress, and many years passed before it was brought to perfection. Various methods are used, as drawing on stone with pen or brush, using liquid ink; drawing on paper and transferring to stone; engraving on stone; drawing on stones with crayons or solid ink and transferring from engraved plates or woodcuts. The printing from all is nearly the same. The stones are composed of lime, clay and silicon earth, and vary in color.

Zincography, the invention of Eberhard of Bavaria, is an application of this art to zinc instead of stone. Its only advantage is in connection with large subjects, the zinc being more portable and less liable to break than stone. In chrome-lithography, by which colored pictures are produced, a large number of stones are used, one for each separate tint, sometimes as many as twenty or thirty colors being printed. Photo-lithography is used in printing plans, and maps, which are copied from a photographic negative and then transferred to the stone.

Lithuania (*lĭth-ū-ā′nĭ-ȧ*), a Baltic state, is situated in the heart of Europe. It is bounded on the north by Latvia; on the east by Russia; on the south by Poland and East Prussia, and on the west by East Prussia and the Baltic Sea. The exact boundaries remain indefinite, due to claims by Lithuania which conflict with the decision creating the Republic. It extends over an area of 55,670 square miles, including Memel, which has an area of 943 square miles.

The country is flat and low, covered largely by sand-heaths, marshes and forests. It is drained by the Dneiper, Duna, Beresina, Pripet and Niemen rivers. The country is primarily agricultural, and rural in character. Of the population 76.7 per cent is engaged in agriculture and only ten per cent in commerce, industry and communications. Of the total area, there is 49.6 per cent in arable land, 25.3 per cent in meadow and pasture, 15.9 per cent in forests and only 9.2 per cent unproductive. The land is divided into small and medium sized farms, which has created an energetic development of livestock raising, dairying and agricultural coöperative societies. In 1932 there were produced in metric tons: rye, 528,500; wheat, 254,700; barley, 221,500; oats, 351,000; potatoes, 1,827,100; flax fibre, 12,300. There were in that year 597,050 horses; 1,297,376 cattle; 1,221,450 sheep, and 1,568,543 pigs. Poultry farming is an important occupation. There are 2,542,627 acres of forests, seventy per cent of which are chiefly pines and only thirty per cent leaf-bearing trees. In 1930, there were produced about 90,000 tons of peat. Wood-pulp and timber products are exported, amounting to $3,640,960 in 1931. In 1931 there were 1,132 industrial establishments with 25,221 employés. Meat and fish products, wood products, tissues, yarns, machines, metallic wares, flour and leather are the chief manufactures, used almost entirely for local consumption. The imports exceed the exports slightly and are forty-seven per cent from Germany. Commerce is furthered by the internal means of communication. In 1932 there were 990 miles of state-owned railway; 9,738 miles of highway; 301 miles of navigable rivers for steamboats, and 1,242 navigable miles for rafts. The river Niemen is navigable for about 270 days in the year. Memel is the only port.

In 1931-32 there were 2,541 primary schools with an enrollment of 245,685 pupils, and 4,655 teachers; forty-eight secondary schools with an enrollment of 4,862 and 395 teachers; fifty-three gymnasiums (high schools) with an enrollment of 15,249 and 956 teachers; and eleven teachers' training colleges with 1,185 pupils. There are also twenty-five special training schools offering commercial, technical, art and music courses, with a total enrollment of 3,720; and eighty-seven lower grade special schools with an enrollment of 4,088. On February 16, 1922, the State University (University of Vytantas the Great) was opened at Kovno, and in 1932 had an enrollment of 4,475 and a faculty of 285. The Academy of Agriculture had in that year an enrollment of 246, with forty-five teachers.

A constitution adopted on August 1, 1922, and amended on May 15, 1928, declares Lithuania to be an independent Democratic Republic. Legislative power rests in a Diet of 112 members, directly elected on a proportional representation basis by universal equal suffrage. The President is elected by the Diet for a term of seven years. The Diet term is five years, and the age of the electors not under twenty-four. The President appoints the Premier, and the other Cabinet Ministers on recommendation of the Premier. They are responsible to the Diet. All citizens are equal before the law. There are no classes or titles, and inviolability of person, homes and correspondence is guaranteed, as well as freedom of religion, conscience, the Press, speech, strikes, assembly and organization. National minorities, as Jews, Germans, and Poles, are given cultural autonomy.

Lithuania, because it had no natural boundaries, was frequently invaded, but, after being long tributary to various neighboring Russian principalities, it recovered its independence about the twelfth century, only to become involved in a struggle with the Knight swordbearers and the Teutonic Order who converted them to Christianity. The people had no central government until the latter part of the middle ages. Ryngold, a warlike clan chief of the early part of the thirteenth century, is thought to have begun a stable government. Ryngold's son Mindog, a shrewd and vigorous character, reigned over Lithuania until about 1263. Gedimen, who ruled from 1315 to 1340, made Lithuania a powerful state by the conquest of Volhynia and Kilo, which had belonged to Russia. Olgerd in 1345 to 1377 added parts of southern Russia. In 1386 Jagello, a grandson of Gedimen, grand prince of Lithuania, married Hedwig, the daughter of Louis the Great of Poland, and became King of Poland with which he united Lithuania; he also converted his hereditary subjects to Christianity. After Jagello, for 100 years Lithuania and Poland had separate rulers, although somewhat united politically. From 1501 they had a common ruler; in 1569 the Diet of Lublin decreed the permanent union of Poland and Lithuania into one commonwealth to be governed by an elective king. From this time the history of Lithuania is that of Poland. At its greatest power, in the fourteenth century, Lithuania extended from the Baltic Sea to the Black Sea and from the Northern Bug River to the Don. In 1772 it had an area of 100,000 square miles, included in the Russian governments of Vilna, Mohileo, Minsk and Suwalki. In 1915, the Russian control gave way to German, and on February 16, 1918, Lithuania was declared independent. A Bolshevist Army succeeded the German rule until the agreement of 1920, when a constituent assembly convened. The boundary question remained a matter of dispute, as did the Memel and Vilna districts. In 1924, Memel became autonomous under Lithuanian sovereignty, but the Vilna dispute remained unsettled. Although Vilna was in 1923 transferred to Poland by the Council of Ambassadors and Kovno declared the capital, Lithuania in 1931 still claimed Vilna as capital.

Since the close of the war when the Republic of Lithuania was created, Poland and this Baltic republic have disagreed over the boundary which Lithuania demanded. Poland has occupied a vast area of Lithuanian territory for several years, an area in which are situated the cities of Vilna, Grodno and Sulvaki. The spread of Nazi propaganda into the Baltic States, however, prompted Soviet Russia and Poland to offer the Baltic republics a guarantee of safety against Nazism by negotiating for a pact with these states. The proposal was rejected by Finland, and although Lithuania is inclined to approve the pact a direct reply has not as yet been forthcoming from the Government. It is believed that the conclusion of such a pact would accomplish much for Lithuania in that it would bring about a cessation of Polish aggression and re-establish diplomatic relations between the two powers as well as safeguard the Republic against Hitler's creed of expansion.

Relations between Lithuania and Germany have been strained since the signing of the Treaty of Versailles by which Lithuania was awarded the management of Memel. This territory is inhabited by both Lithuanians and Germans, and it is here that Lithuania has encountered her greatest difficulties in suppressing Nazi activities. Nazi agitation and propaganda so steadily increased in Memel in recent months that on February 22, it became necessary for a Lithuanian judge in the territory to prohibit any further activities of the Socialist Peoples party and the Christian Socialist Workers party until such time that thorough investigation proved that armed rebellion was not being contemplated in view of withdrawing from Lithuanian supervision. The Lithuanian Government is constantly on guard to suppress any activity which threatens the integrity of the Republic. Every step taken by the Lithuanian Government to maintain law and order in Memel has met with protest from Germany. The Reich holds that the suppressive measures enacted by the Kaunas Government are infringements "upon the autonomy of the territory and the rights of the Germans living there." On February 23, the Berlin Ministry of Foreign Affairs informed the Kaunas Government that unless anti-Nazi activities subsided in Memel, the future relations between Germany and Lithuania would suffer the consequences. In March, however, Nazi agitation mounted to a new peak and necessitated the arrest of several Nazi leaders. Nazism is spreading rapidly in Memel despite Lithuania's anti-Nazi activities.

Lithuania's Fascist problem is much more intense and severe than that of the other Baltic republics. The Fascist or Nazi tendencies manifested in this republic are coupled with a strong nationalism which dominates the residents of the Memel territory. Since the conclusion of the Polish-German Pact and the development of strained relations between Lithuania and Germany over Nazi activities in Memel, the Republic of Lithuania has come to realize that German support in her dispute with Poland is an impossibility. In the face of Nazism which is penetrating into the Baltic States, Lithuania is in dire need of some safeguard against that agitation. At present the only safeguard offered this republic is in a friendship with Poland, her age-old enemy to the south. It is expected that Lithuania will agree to the proposed Russo-Polish pact in the near future.

The inhabitants are chiefly Lithuanians, Poles, Russians, Tartars and Jews, and on January 1, 1932, numbered 2,392,983. Kovno, the seat of the government, has a population of 113,000. Vilna, claimed by Lithuania as capital, 214,600.

Lithium (*lĭth'ĭ-ŭm*), a soft, silvery white metallic element of the alkali group. Lithium is the lightest metal known to science, having a specific gravity of 0.59. Its symbol is *Li;* its atomic weight, 6.94. It was first discovered by Arfuedson as an oxide in 1817, and was first separated as an element by Brande in 1822.

Lithium always occurs in combination with such minerals as amblygonite, petolite, spadumene, and lepidolite. Traces of its presence are also found in mineral waters, plant ashes, meteors and the sun. Lithium oxidizes readily and will rapidly decompose water. By electrolyzing the fused chloride, metallic lithium may be obtained. It forms alkalies like potassium and sodium. The spectrum is an easy test of the presence of lithium as it shows a bright crimson stripe together with a pale yellow.

At one time certain salts of lithium were used for medicinal purposes, such as in the treatment of gout and as a solvent for uric acid.

See CHEMISTRY.

Litmus (*lĭt′mŭs*), or **Lacmus,** a dyestuff which is obtained from the *Rocella tinctoria* lichens and others related to it, by exposure to the air in the presence of ammonia and potassium carbonate. The moss gradually assumes a blue color, due to some attribute of the lichen. Chalk or gypsum is added to render the moss thick enough to be formed into rectangular cakes, which, when dried, are ready for use. Litmus is never used as a dye, but is employed by chemists to detect free acids and free alkalies. The blue of litmus is turned to red by an acid, and the color again becomes blue when mixed with an alkali. Litmus paper, that is, paper infused with litmus both in its red and blue state, is the form in which litmus is generally used as a test.

Little Entente, a combination of nations or defensive alliance entered into by the three countries, Czechoslovakia, Rumania and Yugoslavia in October, 1920, which was aimed primarily at maintaining the *status quo* in central Europe as established by the Treaties of Versailles, Trianon and St. Germain. Since its inception other European nations have joined the alliance in the interest of fostering peace and stability. In 1929 the treaties of the Little Entente were renewed. The three original members of the alliance were aligned with France. Soon after the development of Franco-Italian strife in 1930, however, it seemed probable that Rumania might ally with Italy.

It was on January 9, 1934, that the Economic Council of the Little Entente convened at Prague for the first time. The president of the council, M. Benes of Czechoslovakia, presided at the meeting at which Foreign Ministers of Greece, Turkey, Rumania and Yugoslavia represented their respective countries. M. Benes disclosed the chief purpose of the Little Entente, which was established in October 1920. At its inception its purpose was purely political and was aimed at maintaining the *status quo* of Central Europe as established by the treaties of Versailles, Trianon and St. Germain. During the fourteen years of its existence the Entente gradually absorbed certain economic objectives into its original purpose of existence. On January 9, M. Benes declared that the chief purpose of the Entente today was the construction "of a new economic organization in Central Europe." One of the most important resolutions adopted by the Council was its aim to reserve fifty per cent of the members' foreign trade for the current year among members of the Little Entente.

On January 20, the first regular session of the Little Entente in 1934 convened after several weeks delay due to the assassination of M. Ion Duca of Rumania. The major work of the conference was the framing of a pact of understanding "which it was hoped would inaugurate a new era in the Balkan Peninsula." The agreement was drafted at Geneva, prior to the opening of the conference, by Prime Minister Titulescu of Rumania and Premier Maximos of Greece. On February, the text of the pact was initialled at Belgrade by the Foreign Ministers of Greece, Turkey, Rumania and Yugoslavia. The pact was signed on February 9 at Athens.

Many months of negotiating preceded the actual acceptance of the agreement. The major difficulty throughout the negotiations had been Bulgaria. Yugoslavia was insistent that the terms of the agreement be so constructed as to enable Bulgaria and Albania to adhere to its principles. Both of these states strenuously objected to any bilateral pacts which might affect their territorial claims against their neighbors. Since 1928 the Little Entente has accepted in principle the Kellogg-Briand pact. It is in accord with the principle therein outlined that the Balkan Pact was consummated. The pact contains the following agreements:

"1. Greece, Rumania, Turkey and Yugoslavia guarantee mutually the security of all their Balkan frontiers.

"2. They undertake to consult with each other on the measures to be taken in the face of eventualities susceptible of affecting their interests as they are defined by the present agreement. They undertake not to embark on any political action directed against any other Balkan State non-signatory to the present agreement without previous mutual discussion, nor to assume any political obligation toward any other Balkan State without the consent of the other high contracting parties.

"3. The present agreement will come into force immediately upon its signature and will be ratified as soon as possible. It will be open to all the Balkan countries, whose adhesion will be the object of a favorable examination by the high contracting parties, and will take effect as soon as the other signatory countries have notified their agreement."

The signing of the pact gave rise to comment throughout the states of Europe, particularly in Bulgaria. At Sofia, the Bulgarian capital, officials held that the pact had been directed against Bulgarian interests.

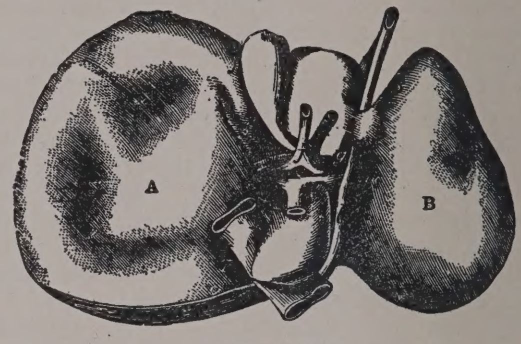
Little Falls, a picturesque city in Herkimer County, New York, is situated on the Mohawk River, about seventy-three miles northwest of Albany. Within the city limits the Mohawk, passing through a rocky gorge, falls forty-five feet and affords an abundance of water-power for the city's industries. There are several factories, tanneries, and foundries in Little Falls. The principal manufactures include knit goods, paper, dairy machinery, leather, bicycles, carriages, and furnaces. There are excellent schools and churches in the city. In 1930 the population was 11,105.

Little Rock, an important city, the seat of Pulaski County, and the capital of the State of Arkansas, is situated on the Arkansas River, about 145 miles northeast of Texarkana and 128 miles southwest of Memphis, Tennessee. The city is built on a bluff about fifty feet above the river, and bears its name in contrast to Big Rock, a promontory a mile from the city, upon which is located the army-post called Fort Logan H. Roots. Prominent among its numerous industrial establishments are cottonseed-oil mills, cotton compresses, beer and bottling works, flour mills, brick and tile works, foundries and machine shops. It has excellent systems of waterworks, electric lighting and street-railway Little Rock has many banks and several building and loan associations, and among its prominent buildings are the capitol, Albert Pike Consistory (Masonic), St. Andrew's Cathedral (R. C.), Christ Church (P. E.), the Jewish Temple, the Methodist and Baptist Churches, the custom-house and postoffice and the county courthouse. The Arkansas School for the Blind, Deaf-Mute Institute, Lunatic Asylum and Penitentiary are also located in Little Rock. The city maintains one of the best public-school systems in the southwest, has excellent school-buildings and a school-board building, in which the superintendent and school-board conduct their meetings. There are a number of private educational institutions, two business colleges, Arkansas Military Academy, Arkansas Baptist College, a convent and Philander Smith College. Little Rock was settled in 1819, became the seat of territorial government in 1820, and capital on Arkansas' admission to the Union in 1836. It has the service of two railroads and a population of 80,000

Little Tur'tle, a Miami chief, noted for shrewdness and bravery. He commanded in the battle in which General Harmar was defeated on the Miami, Oct. 22, 1790, and was also in that in which General St. Clair was defeated at St. Mary's, Nov. 4, 1791. He was present, but not in command, at the battle of Fallen Timbers, Aug. 20, 1794, when the Indians were defeated by General Wayne. A year later Little Turtle was one of the chiefs who signed the treaty of Greenville, which opened a large tract of Ohio to settlement. He is said to have had some schooling in Canada. He visited Washington at Philadelphia in 1797, and was given a fine pair of pistols by Kosciusko. He died at Fort Wayne, Ind., July 14, 1812.

Liukiu. See Loo-Choo Islands.

Liv'er, an important digestive organ found in many invertebrates and all vertebrates. It is the largest gland in the human body, weighing three or four pounds and measuring about 12 inches from side to side and six or seven from front to back. It is situated on the right side just below the diaphragm, and arches over a part of the stomach. It is divided into two unequal lobes, the right one being much the larger. The substance of the liver is divided into five-sided lobules, which, in turn, are made of cells. Running through its substance are blood-vessels, lymphatics, nerves and branches of the bile-duct. The latter collects the bile and connects with the gall-bladder in which the bile is stored. The bile-duct also opens into the small intestines not far from the stomach. The liver performs many offices. First it secretes bile, which is of use in helping the absorption of fats. Then it forms liver-sugar, as was shown in 1848 by Claude Bernard. Within its substance red blood-corpuscles are broken up, and it aids in removing urea from the blood in connection with the kidneys. Finally, the liver plays a part in food elaboration. Food does not pass by a single step from lifeless material into living protoplasm, but there are many steps by which it is changed a little and advanced on its way. The precise work of the liver in this direction is imperfectly understood, but it is believed to be considerable. The circulation in the liver is peculiar. There is, first, arterial blood coming directly from the aorta through the hepatic artery, and this nourishes the liver. The other blood-supply is through the portal system. This is venous blood which has already passed through one set of capillaries in the stomach, intestines or spleen, and is carried in the portal vein to the liver. There it branches and breaks up into another set of capillaries within the liver. Uusually venous blood passes directly to the heart. It is altogether exceptional for it to be carried to another organ and there pass through another set of capillaries, but this occurs in the liver and is called the portal circulation.

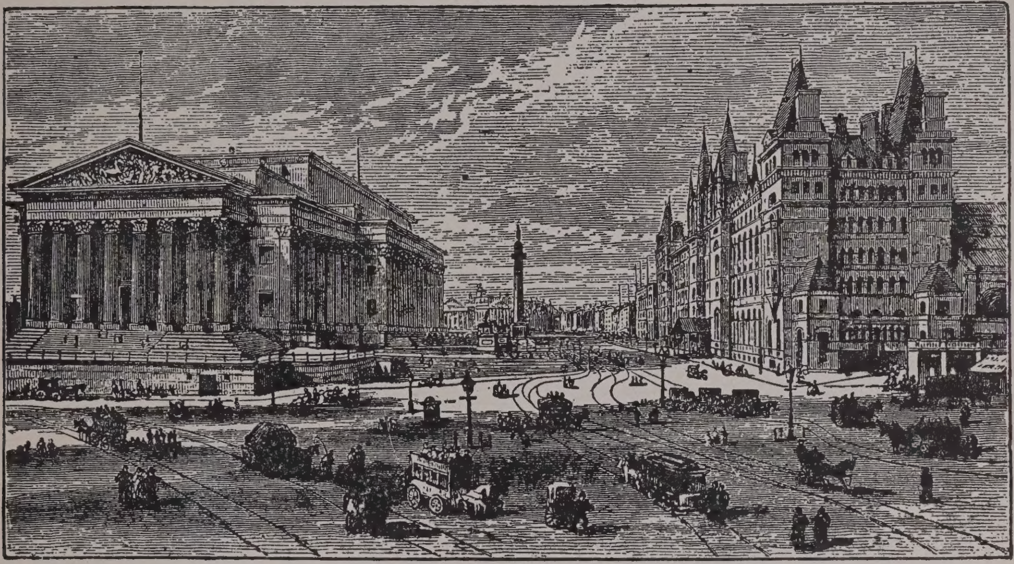


THE LIVER
(a) Right Lobe (b) Left Lobe

Liv'ermore, Mary A., daughter of Timothy Rice and wife of D. P. Livermore, a Universalist minister, was born at Boston, Mass., Dec. 19, 1821. Mrs. Livermore was known as one of the leading and ablest advocates of woman suffrage. She also lectured on temperance and other reforms. On the platform she proved herself the peer of the most distinguished orators, and in grace, refinement and all the higher qualities of womanhood she had few superiors. Her *Story of the War* is well-known, as are *The Story of My Life*, *What Shall we do with our Daughters?* and *Pen-Pictures*. She died in 1905.

Liv'erpool, the third city in the United Kingdom, is situated on the Mersey (*q.v.*)

in Lancashire, England. Its situation on the western coast makes it the port for a large trade with America. It is 31 miles from Manchester and 201 from London. Its great trade has given rise to a magnificent system of docks, extending 34 miles and covering 544 acres. Docks owned by canal-companies and similar corporations increase this amount to over 1,500 acres. Nearly all of the docks have been built since 1812. For steamers there is a large, floating landing-stage 2,063 feet long, connected with the shore by seven bridges. The town-hall, built in 1754; St. George's Hall, nearly 500 feet long, with its great organ; custom-house, sailor's home, free library, museum of natural history, Walker Art Gallery, the botanic gardens, observatory and Athenæum are a few of the many interesting sights. University College, founded in 1882, with 30 instructors; Liverpool College, Queen's College, Liverpool Institute and other schools of art, medicine and law furnish the means of higher education. There are eight parks and seven cemeteries. Liverpool's early prosperity was largely due to the cotton-trade, through which, during the last 40 years of the 18th century, the population increased from 25,700 to 77,700. Shipbuilding also received a start at that time from government orders for vessels of war. The foreign trade now is about one third of that of the whole kingdom. The total trade of this port in 1906 (imports and exports) amounted to 277,590,925 pounds sterling. In 1905 the tonnage entering and clearing the docks was 14,019,531 tons, representing 4,529 vessels. The large imports are beef, bacon, pork, ham, rice, lard, sugar, tobacco and breadstuffs; and the exports mainly are cotton, woolen and linen goods, metals, machinery, hardware and cutlery. There are large shipbuilding yards, iron and brass foundries, engine-works, tar and turpentine distilleries, rice and flour mills, tobacco, cigar and soap-factories. The name is first found in a deed of 1190. In the middle of the 14th century Liverpool contained 840 inhabitants. The first dock was built in 1700, and the Bridgewater Canal, which increased its inland trade, was opened in 1771. It was the leading port for the African slavetrade, and as late as 1807 her shipowners had 185 vessels, carrying 44,000 slaves, in the business. In 1899 the number of emigrants from its ports was 118,552. The population by census of 1911 was 746,566. See *Memorials of Liverpool* by Picton.



ST. GEORGE'S HALL AND LIME ST. STATION

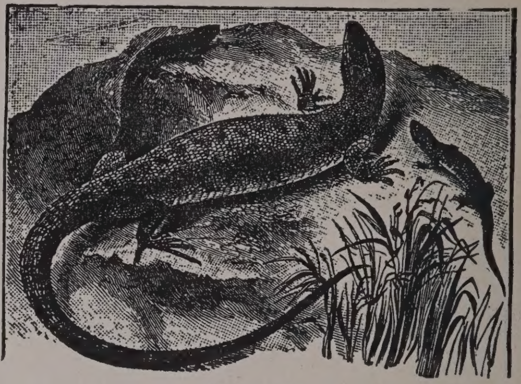
Liv'erworts. See HEPATICÆ.

Liv'ingstone, David, Scotch missionary and traveler, was born near Glasgow, March 19, 1813. From his 10th to his 25th year he worked in a factory and educated himself. Robert Moffat, a missionary to Africa, turned Livingstone's heart to that continent, and in 1841 he settled at Kuruman. For several years he labored successfully in the Bechuana country. [The Boers opposed his efforts to plant native missionaries in Transvaal. This opposition led him to go northward, where he discovered Lake Ngami and found the country watered by fine rivers and densely populated. His anxiety to benefit this region led him to desire to explore from the Indian to the Atlantic Ocean. He was from June, 1852, to May, 1856, in accomplishing this stupendous enterprise. He resigned from the staff of the London Missionary Society and went home. In 1857 he wrote *Missionary Travels* and visited Cambridge University, awakening the enthusiasm of many students and leading to the formation of Universities' Mission. He also was appointed by the English government to explore the Zambezi and its tributaries. Among other discoveries of this expedition was that of Lake Nyasa. He came to the conclusion that this lake was the best field for both commercial and missionary operations. The mission had to be abandoned; the Portuguese opposed him; and a dispatch recalled the expedition. He returned to London in 1864. His objects in going home were to expose the Portuguese slavetraders and to obtain means for establishing missions where the African slavetrade, which he called "the open sore of the world," might be dried up. His second book (*The Zambezi and Its Tributaries*), was designed to further this purpose. The Royal Geographical Society proposed that he return and determine the watershed of Central Africa and the sources of the Nile. In 1866 he set out from Zanzibar, first trying to find a suitable settlement for missionary operations and then striking westward to solve the geographical problem. In 1869 he discovered Lakes Moero and Bangweolo. He struck westward again as far as the Lualaba, thinking it might possibly be the Nile but far from certain that it was not the Congo, which it proved afterwards to be. At this period Livingstone was lost to the civilized world. *The New York Herald* sent H. M. Stanley "to find Livingstone." He found him (1871) resting at Ujiji, but could not induce him to return until he had made one more effort to solve the geographical problem. He went back to Lake Bangweolo, his sufferings increasing until he rested at Ilala, and on May 1, 1873, he was found by his attendants on his knees, dead. His remains are buried in Westminster Abbey. See *Personal Life of David Livingstone* by Blaikie and *Life* by Hughes in the Men of Action Series.

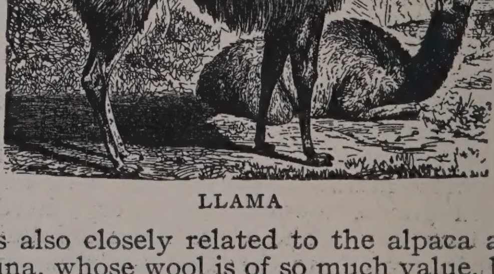
Livor′no, Italy. See LEGHORN.

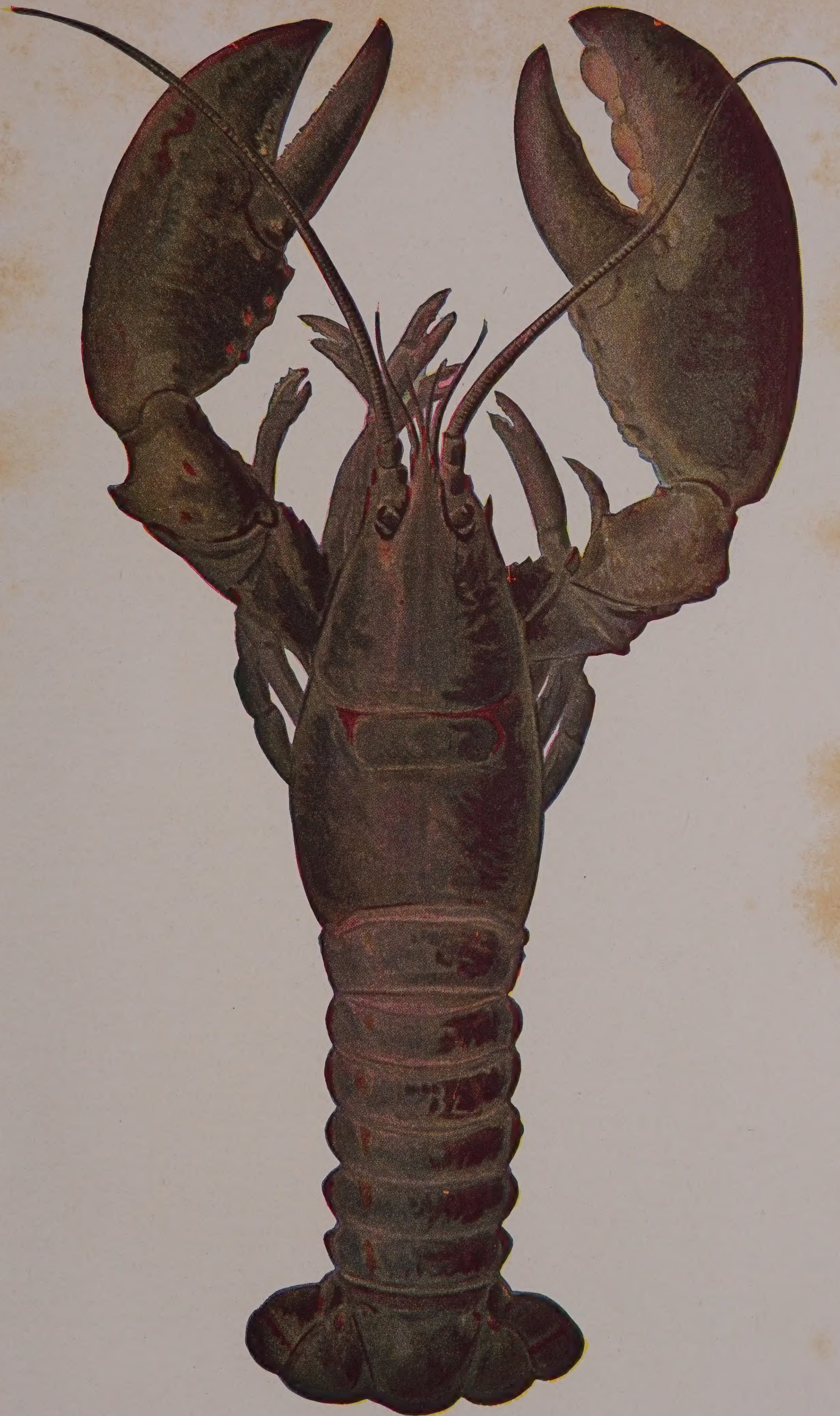
Liv′y, Titus Livius, Rome's greatest historian, was born in 59 B. C. and died in 17 A. D. His history comprised 142 books, of which all but 35 were lost. The hope of finding the lost ones, renewed at different times, has never been realized. He never flattered the great Augustus, as did Vergil and Horace. He even expresses the doubt whether the great Cæsar were a curse or a blessing to the commonwealth. His style is judged to be almost perfect. His defect is that he wrote history as a fine art; for he did not go far to investigate facts, and is reported to have declined, at the suggestion of Augustus, to verify an important inscription in a temple.

Liz′ard, any one of a large number of reptiles making the natural order *Locertilia* and found in all the warmer portions of the earth, abounding in tropical lands. They are often confused with the salamanders, which are similar in form but belong to the class *Amphibia*. Although often repulsive in appearance, the lizards usually are harmless. The only poisonous members of the group are the gila monster (which see) and its near relatives, all belonging to the genus *Heloderma*. Most of them are of service in destroying insect pests. In Hawaii, as expert mosquito-catchers, they are welcomed to houses. They are usually covered with scales, but not always; are of a wide variety of forms and color, those among forests being green, those in arid regions dull-colored. Most of them lay eggs, the eggs often having a papery rather than a hard covering. In geological ages they reached enormous sizes (sixty or seventy feet long), but the living lizards are of small or moderate sizes. One over three feet long is a monster. They have an elongated body and long tail, usually four limbs, but the limbs may be reduced to two or entirely absent. The bones of the shoulder and hip girdle are always present. They are fitted for various conditions of life. Some live entirely on trees, others on the earth. They have long tongues, and feed chiefly on insects and eggs. Among the lizards of the United States the blue-tailed skinks are widely known. They will shake off their tails to escape capture, and the tail possesses the power of growing again. The harmless basilisk of Guiana and Martinique is connected with ancient tradition and superstition. The glance of its eye was supposed to cause death. The chameleon, the iguanas of tropical America, the frilled lizard of Australia, the flying lizard and the geckos are varieties of lizards.


LIZARDS

Llama (*lä′mȧ*), an animal employed as a beast of burden on the elevated plateaus of Bolivia and Peru. Although related to the camel of the Old World, it has no hump. It is also closely related to the alpaca and vicuna, whose wool is of so much value, but


LLAMA



LOBSTER

the hair of the llama is coarse and rough and suitable only for making string and very coarse fabrics. It is supposed to be descended from the wild guanaco, but has been domesticated for centuries. It is about three feet high at the shoulders. It is capable of carrying 100 to 200 pounds six to 12 miles a day. The males only are used as transport animals. If treated well, they are willing and docile.

Lloyd George, David, British statesman, premier of Great Britain 1916-1922, one of the outstanding figures in the world's history during those years. He was born 1863 in Manchester, England, but was of Welsh descent. His father, William George, a poor schoolmaster, died when David was only two years old, and the boy was reared by an uncle in Wales. He studied law, was admitted to practice when he was twenty one, and almost at once made his mark by winning a number of cases for tenant farmers against their landlords, as well as by defending the rights of Welsh nonconformists against the claims of the Church of England. When he was only twenty-seven he was elected to the House of Commons, but a decade elapsed before he became a national figure because of his opposition to the Boer War. He held a minor place in the Campbell-Bannerman cabinet from 1906 to 1908, but in the latter year became Chancellor of the Exchequer under Asquith. In this position Lloyd George forced through Parliament the Old-age Pension Act of 1908, the budget of 1909, which carried radical innovations in the form of heavy taxes on the wealthier classes, and finally the Parliament Act of 1911, which practically destroyed the veto power of the House of Lords.

Then came the World War, with Lloyd George first as Chancellor of the Exchequer, then also as Minister of Munitions, and finally with the added responsibilities of Minister of War, becoming the directing force in the government. In Dec., 1916, he succeeded Asquith as premier. In Nov., 1918, the country gave him an overwhelming vote of confidence in a general election, but even then there were rumblings of discontent. At the Peace Conference Lloyd George pursued a variable course, which alienated many of his previous supporters. His personality alone was holding together the heterogeneous coalition cabinet in the face of problems of reconstruction on which its members were disagreed, and it became apparent that it was only a question of time before he must retire. He resigned in Nov., 1922; in the ensuing general election he was reelected to the House of Commons, but his followers became a small minority in that body.

Lloyd's, London Exchange. An association of individuals and corporations engaged in the insurance (*q. v.*) business. It takes its name from a coffee house kept by Edward Lloyd in the 17th century, where persons interested in shipping and the insurance of marine risks collected. Originally devoted to marine insurance only, "Lloyd's" is now the source of insurance for an extraordinarily wide variety of risks, including almost any event against which one may wish to protect himself, such as insurance by tradesmen against bad weather on any great public occasion. The value of property insured at "Lloyd's" annually amounts to over $2,000,000,0.

Lob'ster, a large crustacean living in salt water and resembling the crayfish in form. It is of a blue and greenish color, which turns red on boiling, and it usually is seen in the market in this condition. Lobsters are very important as food, the market-value of those handled in Boston for a single year being more than three and one half million dollars. They are protected by law, and reared artificially by the United States Fish-Commission. Those under six inches in length are not allowed to be taken by fishermen. Those commonly taken vary in weight from below a pound to three or four pounds. One weighing four pounds is rather rare and considered large, but monsters have been caught weighing as much as 39 pounds. Except that they are larger, they resemble the crayfish in form and structure. The head and thorax are covered by a buckler-like expanse of shell (carapace), while the abdomen is composed of six articulated joints or segments. They breathe by 20 pairs of feather-like gills, inclosed on each side of the body under the carapace. They have long antennæ and prominent eyes. The front pair of legs ends in large powerful claws. One is blunt and used for anchoring, the other sharper and used for grasping food. Behind these are four pairs of walking-legs, the first two pairs of which also end in claws. Each joint of the abdomen has a pair of swimmerets, and the hind one has expanded plates which aid the animal in swimming backward. The female lays several thousand eggs, attached by a sort of glue to the swimmerets. These hatch into very small larval forms which are free-swimming. These grow and molt many times, and cease to be free-swimming. After becoming mature, they continue to molt or change the shell once a year. They are caught in a pot or trap baited with dead fish or decaying meat. See Herrick's *The American Lobster*, published by the United States Government.

Loch'invar', a favorite Scottish ballad, occurs in Scott's *Marmion.* The gallant young hero of the ballad, Lochinvar, comes to dance at the wedding of the maid whom he loves. He dances with the bride, whispers a word in her ear, and swings her to his saddle as they pass the door. Then follows an exciting and romantic ride, in which the young lovers make good their escape from a furious pursuit.

Lock, an arrangement for fastening doors, drawers and other places which require a key or some other contrivance to open it.

The lock was early used by the Egyptians. Locks and keys of brass and iron have been found in the ruins of Pompeii and Herculaneum. Mechanical genius has taxed itself to make a lock that cannot be picked. During the London exhibition of 1851 a prize of 200 guineas was offered to anyone who could pick the Bramah lock. Hobbs, an American, won the prize; but he spent 14 days in inventing and making his tools and, afterward, 51 hours in picking the lock. Combination-locks are used for burglar-proof safes. These locks can be opened only by certain movements of the handle on an index. Yale of Philadelphia invented an improvement by which the lock can be opened only at a certain time, even by those who know the combination, a timepiece being set with the lock. Changeable key-locks can be locked by any one of a number of keys, but opened only by the one locking it. Some of the locks will give a choice from 60,000,000 keys. See *Treatise on Construction of Locks* by Hobbs and Tomlinson.

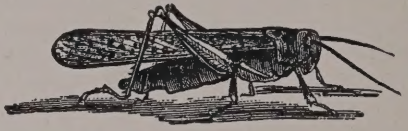
Lock on a river or canal is a double set of gates with a walled-in passage between, by which a boat can pass from one part of a canal or river to another of a different level. The first gate is opened and the boat enters the lock or passage, then the lower gate is closed and the upper one opened, when the water rushing in soon raises the boat to the desired level. The process is reversed when the boat is to be lowered. No canals could be built, except in level countries, without locks

Locke, John, a great English philosopher, was born on Aug. 29, 1632. He was educated at Oxford, where he became a college-tutor. He studied medicine and practiced at Oxford, but his love of philosophy urged him to other pursuits. In 1670-1 Locke suggested to friends that they ought to discuss *What questions is the human understanding fitted or not fitted to deal with?* He gave his best talents for 17 years to the subject, and the world received his *Essay concerning the Human Understanding.* In France he studied and enjoyed the friendship of physicians and naturalists rather than of philosophers. He also spent 1683-88 in study in Holland, returning to England after the Revolution. His first appearance as a writer was *The Letter on Toleration* (1685), written to a Dutch friend and afterward translated into English, which involved him in a controversy in the course of which he wrote three other letters on the same subject. In 1690 appeared his *Civil Government*, a defense of individual liberty, followed by *The Human Understanding.* This was his first acknowledged work, the others having been published anonymously; and, being translated into Latin and French, it soon spread over Europe. He died on Oct. 28, 1704. See Cousin's *Lectures on Locke* and *Lives* by Bourne and Fowler.

Lock'port, a city of New York, county-seat of Niagara County, on Barge Canal, 25 miles northeast of Buffalo. It is named from the ten double locks by which the canal, here cut through solid limestone, falls 66 feet. This gives a water-power, and the city has abundant electric power, too, making it an important manufacturing point. Chief among its industries are the manufacture of glass, cotton-batting, flour, brooms, carriages and wagons, cotton and woolen goods, aluminum, brass bedsteads, paper and wood-fibre products. Near the city are quarries of fine limestone and sandstone flagging. Lockport has several churches and an admirable system of public schools. Population 17,970.

Lo'como'tive. See Steam-Engine.

Lo'cust. On account of a widespread error in the use of the name, it is difficult to convince the generality of people that the locust is only a plain grasshopper. Such is the case, however. The so-called 17-year locust is a cicada. The grasshoppers fall into two groups: those with long and those with short antennæ. The locusts belong to the former. The locusts mentioned in history are grasshoppers. At times locusts appear in great numbers in oriental countries. A column of flying locusts has been seen in India, estimated to be several hundred miles long and dense enough in some places to obscure the light of the sun. Our Rocky Mountain locust, which has produced so much damage to crops west of the Mississippi, is a small grasshopper very similar to the common red-thighed grasshopper of the eastern United States. The nonmigratory ones, though more easily controlled, work great damage. The California devastating locust and the pellucid locust have been very destructive in California. To the south belongs our largest locust, which is sometimes very destructive. The differential locust has proven a great pest in Mississippi and Louisiana, appearing in countless numbers following an overflow of the Mississippi River succeeded by a dry summer. Eggs are deposited generally from August 10 to September 15, not hatched until the next May, and the insect is full-grown by the last week in June. The destruction of locusts' eggs is of prime importance, and is accomplished by deep fall-plowing or harrowing. Burning dry grass and stubble to destroy newly hatched locusts has proved successful; crushing and ditching are recommended. "Hopper-dozers" containing crude kerosene or coal-tar are used for catching the young in infested fields. Experiments have been made with spreading a fungous disease that attacks



LOCUST

locusts, and a poison-mash has proved effective in some instances. See Cicada and Grasshoppers. Consult Sanderson: *Insects Injurious to Staple Crops.*

Lo'cust, a North American species of trees and shrubs, sometimes called the acacia, belonging to the pea family. The common locust grows sometimes 70 or 80 feet high, with a rough bark, fine leaves and white, very fragrant flowers, honey-sweet, hanging in long, loose clusters. It is a slender tree, has leaflets that are long and rounded, growing in graceful sprays. The blossoms are seen in May and June; the fruit is a smooth, flat, purple-brown pod, ripe in September, hanging on the trees all winter. It is a rapid grower, and the hardness and durability of the wood make it a valuable tree for timber; the wood is yellowish in color, with a smooth grain; it is used for posts and in exterior construction. Its great enemy is the borer, which sometimes destroys the trees of a large region. The honey-locust, with pink flowers, the carob-tree on Mediterranean shores and the locust of the West Indies are other trees bearing the name.

Lodge, Senator Henry Cabot. Three years before the Spanish-American War, a young man, just turned 33 years of age, entered the Senate chamber at Washington as Senator from Massachusetts. He had been born in Boston in 1850, one of the descendants of the old New England Lowell-Cabot-Lodge families. He had been graduated from the Harvard Law School, and had been a member of the Massachusetts Legislature. Moreover, he had served his national legislative apprenticeship, having represented Massachusetts in the House of Representatives during four terms. This man was Henry Cabot Lodge, who aged 74 died Nov. 9, 1924, at Cambridge, Mass. From the year 1893 until his death—31 years—he was a member of the United States Senate. As committee appointments in the Senate are awarded according to the rule of seniority, the most important chairmanships in the Senate had been his. In 1916 he was Roosevelt's choice for President, but was unable to win the nomination.

Wilson versus Lodge. President Wilson laid the failure of the League of Nations, so far as the United States was concerned, largely to the opposition of Senator Lodge. The two men, both highly educated in statesmanship, history, and politics, and each a representative of a different school of political thought, met in a conflict over the issue of participation by the United States in European matters, and Senator Lodge won.

In 1921 President Harding appointed Senator Lodge Special Ambassador to represent the United States in the Washington Conference for the Limitation of Armaments, and Mr. Lodge always considered his speech presenting the four-power treaty for the peace of the Pacific his greatest effort.

Senator Lodge was also an historian and essayist, among his books being histories of Washington, Hamilton, and Webster, and his *Short History of the English Colonies in America.*

He was editor of *The North American Review* from 1873 to 1876, and accepted the first article ever purchased from the pen of Woodrow Wilson. As Professor of History at Harvard, he once had Theodore Roosevelt, later President of the United States, as a student under him.

Lodge, Sir Oliver Joseph, principal of Birmingham University, was born in 1851 in Staffordshire, England, and educated at University College, London, graduating in 1877 as doctor of science at London University. An original thinker, he was a pioneer of wireless telegraphy; inventor of machinery for dispelling fog; and prominent in psychical research, with a profound faith in the ultimate unity of science and religion. Has done much to introduce religion into the spirit of modern criticism and scientific knowledge. In his inaugural address as president of the British Association for the Advancement of Science (1913) his expressed conviction that memory and affection persist after death and that the dead may exert influence on the living attracted wide attention and discussion both by scientists and the general public. His writings embrace *Modern Views of Electricity, Pioneers of Science, Signaling Across Space Without Wires, Lightning Conductors and Lightning Guards, Electrons* (recent discoveries in electricity); *School Teaching and School Reform;* and *Life and Matter,* a criticism of Haeckel's *Riddle of Existence. Raymond,* an account of communications received from the spirit of his son who was killed in the European War, was widely read and discussed both by scientists and the general public.

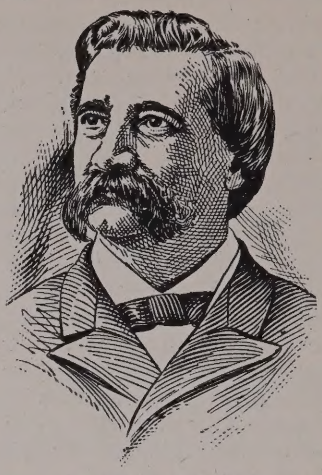
Lodi (*lō'di*), a town in northern Italy, on Adda River, 18 miles southeast of Milan. It has a Gothic cathedral dating from the 12th century; manufactures linens, silks and majolica ware; and has a great trade in cheese and wine. It is best known as the place in the vicinity of which, May 10, 1796, Bonaparte forced the long and narrow bridge in face of the Austrian batteries. Population 32,000.

Lodz (*lôdz*), sometimes called the Manchester of Poland, is situated 76 miles southwest of Warsaw, and is the most populous city in Poland, except Warsaw. Its rapid growth is the result of its numerous cotton and woolen manufactories, of which there are more than 120. Population 410,000.

Lofoten or **Lofoden** (*lō-fō'ten*) **Islands,** a chain on the northwestern coast of Norway, stretching 150 miles with an area of 2,247 square miles. All are rugged and mountainous, many of the summits being crater-shaped. The highest point is 3,090 feet high. Vast schools of codfish visit these waters annually from January to March. The fishing is attended with danger, on account of the sudden storms from the west and the strong currents which set in between the islands. Their famous maelstrom is the result of a strong current rushing in and out of a great fiord between Norway and these islands. Owing to the Gulf Stream the winters are mild, grass grows abundantly, and sheep-farming is carried on. The permanent population numbers 36,000.

Log is the instrument by which a ship's rate of motion in the water is measured. In its oldest and simplest form it is a piece of teakwood, in shape one fourth of a disk, called a log-ship, loaded on the curved edge so as to float point upward. Every hour or two hours it is thrown overboard for 28 seconds, or, if the ship is going very fast, for 14 seconds. It is attached to a line called the log-line. The supposition is that, when thrown into the sea, it will remain stationary while the log-line is freely paid out from a reel held by hand on board. This log-line is divided into equal sections by knots or strips of leather, each section being that part of a geographical mile which 28 seconds are of an hour; so that the number of sections of the log-line which run out during 28 seconds is the same as the number of miles which the ship is going per hour at the time. The method is inaccurate, because in some motions of the sea the log will not remain stationary even 14 seconds. The log-book is a book containing account of courses steered, the state of the weather, employment of crew and like matters. This book becomes the diary of the ship. There also is the official log-book issued by the board of trade at the beginning of a voyage, and returned at its end. This book contains a record of the crew, offenses, desertions, sickness and the like. It is a civil record of the voyage.

Lo'gan, the name of a chief of the Cayuga Indians, who lived on the Susquehanna River and was born about 1725. The name was taken from James Logan, a prominent citizen of Pennsylvania. In early life Logan was friendly to the whites, but after the murder of his family he began a war, in which for several months great cruelties were inflicted on the settlers. When the Indians were finally defeated at the mouth of the Great Kanawha in Virginia, Logan sent the governor this message: "I appeal to any white man to say if he ever entered Logan's cabin hungry and he gave him not meat; if ever he came cold and naked, and he clothed him not. My countrymen pointed as they passed, and said: 'Logan is the friend of the white man.' But now there runs not a drop of my blood in the veins of any living creature. This called on me for revenge." He grew very intemperate, and in a drunken frenzy knocked down his wife and fled, supposing her dead. Meeting a party of Indians, he thought they meant to attack him, and he turned upon them, when they killed him in self-defense, near Detroit, in 1780.



JOHN A. LOGAN

Logan, John Alexander, American general and statesman, son of Dr. John Logan, an Irish physician, was born in Jackson County, Ill., Feb. 9, 1826. As a boy his school-advantages were meager. He served in the Mexican War, was promoted to a lieutenancy, and became adjutant of the regiment. After a course in Louisville Law School, he formed a partnership with his uncle. In 1852 he was elected to the legislature and re-elected in 1853 and in 1854. He was elected to Congress in 1858 as a Democrat and again in 1860. He was at Washington attending the extra session of 1861 when the first advance on Bull Run occurred.

The nearness of the conflict was too much for his martial spirit. He left his seat, entered the ranks of a Michigan regiment, and took part in the battle of July 21. Resigning his seat, he raised the 31st regiment of Illinois volunteers (1861) of which he was chosen colonel. Soon afterward he became conspicuous in the battle of Belmont, where he led the charge which broke the enemy's line. For bravery at Fort Donelson, where he was severely wounded, he was promoted to be a brigadier-general, March 5, 1862. For skill and bravery at the siege of Corinth and in Grant's campaign in Mississippi, he was appointed a major-general, Nov. 29, 1862. Placed in command of the 3d division, 17th army-corps, he bore a distinguished part in the Vicksburg campaign, exhibiting the qualities of an able leader and winning renown for personal bravery, especially at Raymond, May 12, and at Champion's Hill, May 11, 1863. At the siege of Vicksburg he was in command of the center, and led the column which took possession of the city on July 4. He succeeded to the command of the 15th army-corps, and took part in every battle of Sherman's memorable and bloody campaign from Missionary Ridge to Atlanta. When McPherson fell at Atlanta, Logan took his place in command of the army of the Tennessee. In the autumn of 1864 he returned to Illinois and took part in the presidential campaign, making many speeches for Lincoln in the western states. He rejoined his command at Savannah in January, 1865, marched through the Carolinas with Sherman, and took part in the last battle of the war at Bentonville. He succeeded General Howard in command of the army of the Tennessee in May, 1865. In August he resigned from the army, with a glowing record as an able general, inspiring leader and hard fighter. Returning to his state, he at once became prominent in politics as a Republican leader. He was elected to Congress in 1866, 1868 and 1870. In 1871 he was elected to the United States senate, in 1879 and in 1885. He took a prominent and influential part in the legislation relating to the reconstruction of the south, and from his activity in promoting measures for the benefit of the soldiers came to be regarded by them as their special champion and friend. In 1884 he was nominated for vice-president on the ticket with James G. Blaine, but was defeated. He was one of the founders of the Grand Army of the Republic, and its first national commander. He also first instituted Memorial Day, which is now observed as a national holiday on May 30th every year. He published *The Great Conspiracy* in 1886, and his *Volunteer Soldier of America* appeared after his death, which occurred at Washington, D. C., Dec. 26, 1886. See *Life* by Dawson.

Lo′gan, Major John A., son of the above, was born in Illinois on July 24, 1865, served in Cuba and in the Philippines, where he was killed in an engagement with the insurgents at San Jacinto, Nov. 12, 1899.

Logans. See Rocking-Stones.

Lo′gansport, county-seat of Cass County, Ind., lies 75 miles northwest of Indianapolis, at the crossing of three railroads, where Eel River joins the Wabash. There are extensive railroad shops, besides flour and lumber mills and foundries, and the town has a large shipping-trade in grain, pork etc. Population, 21,000.

Logic (*lŏj′ĭk*), plainly defined, is the science of reasoning or that specific course of connected argument by which a conclusion is reached. Socrates first devoted part of his writings to a generalized idea of the art; but Aristotle, in some of his works, reduced it to a science, and the rules laid down by him survive to the present day, only modified from the pure or formal logic of the ancients by the addition of what is called mixed or material logic, treating of facts but not of the course by which such facts are reached. Formal logic, complete, regards thought, not as an expression of the existence of matter or the truth of a statement, but as a series of operations which, if strictly and properly followed out, produce an end consistent with the beginning. Technically, a proposition in logic is divided into three parts—the term or notion, the judgment or proposition and the reasoning or syllogism. The first is merely in the nature of a definition of the subject-matter; the second, the process or opinion by which it becomes worthy or capable of allowing argument; and the last, the argument. Among modern writers Bacon is said to be the founder of mixed or inductive logic, and his theories received much development and broader treatment at the hands of John Stuart Mill. Broadly, the branches differ in that pure logic allows argument from an established whole, and inductive logic argues to build the whole. See Jevons' *Logic*.

Log′wood, a tree which is a native of Mexico and Central America. It has also been naturalized in some of the West Indies. The sap-wood is useless, and is hewn off with the bark. The heart-wood is slightly heavier than water, hard and coarse-grained. Extracts of this heart are made for dyeing purposes. Logwood, although itself a dark red, does not produce red colors, but shades of purple, blue and gray, which are not permanent unless fixed with what is called a mordant, a material for setting the color. Its most important application is for dyeing black and in making ink.

Lohengrin (*lō′ĕn-grĭn*), the hero of an old German poem. He was a knight of the Grail, the son of Parzival, taken at King Arthur's command by a swan through the air to Mayence, (or to Antwerp as some authorities say), where he fought for Elsa, daughter of the duke of Brabant, overthrew her persecutor and married the lady. On his return from warring against the Saracens, Elsa, contrary to his prohibition, persisted in asking him about his origin. He yielded to her curiosity, and was at once carried back to the Grail. Wagner made the legend the subject of his great opera of *Lohengrin*.

Loire (*lwär*) **River,** the largest river of France. It rises in the Cevennes at an elevation of 4,511 feet, and empties into the Bay of Biscay. It is 620 miles long, and navigable for 550 miles. It rises and falls with the tide as far as Nantes. It is connected with the Seine, the Saône and the harbor of Brest by canals, and is noted for its destructive floods, though the lower parts are protected by dikes 20 feet in height. See *The Seine and the Loire*, with illustrations by Turner.

Lol′lards, a sect that originated at Antwerp in 1300; a term of reproach or ridicule. Their mission was to furnish care and ministration to the sick. The name was afterwards given to the followers of Wiclif in England and Scotland, who were most cruelly persecuted in the reigns of Henry IV and Henry V in England and a little later in Scotland. They survived till the 16th century Reformation, and were one of the reasons why it succeeded with the plain people of England and Scotland

Lom′bards were a people of Germanic descent. The name (from *Longobardi*) is thought to mean long beard, from the long beards of the people. Though never a numerous race, they were distinguished for their fierce love of war. They invaded Italy in 568 and established themselves there, but adopted the Latin language, began to build churches, founded monasteries, and gradually united with the Italians. Charlemagne the Great overthrew the Lombard dynasty and had himself crowned king of the Franks and of the Lombards. From that time the Lombards merged entirely into the Italians. In the 13th century Lombard Italians visited England for trade and gradually became London bankers. They dwelt principally on Lombard Street.

Lom'bardy, that part of upper Italy between the Alps and the Po. It comprises the following provinces in the plains of the river: Brescia, Como, Cremona, Mantua, Milan and Pavia. The area is 9,297 square miles, with a population of four and a half millions. The country was conquered by the Romans in B. C. 222, belonging to the Carlovingians from A. D. 843 to 961, and was a bone of contention at one time between the king of France and the German emperor. The emperor prevailing, through Charles V it passed to Spain. In 1815 it fell to Austria; but in 1859 it was given up to Italy, of which it is now a part.

Lo'mond, Loch, "the queen of Scottish lakes," lies 23 feet above sea-level and is 22 miles long and from three fourths of a mile to five miles wide. It is studded with 30 wooded islands. Of the hills and mountains beautifully surrounding it, Ben Lomond is the highest, rising to an elevation of 3,192 feet. A cave on the bank of this lake is said to have been a hiding-place for King Robert the Bruce and for Rob Roy.

Lon'don, the most populous center in the world and the capital of the British Empire, is situated on the Thames River, about 60 miles from the sea. The name is Celtic, and seems to mean a fort on a lake, as the Thames here is a tidal inlet which once covered all the low-lying land around. The ancient city was surrounded by a wall, built in the 4th century, and covered about 380 acres, and that part is still called "the city." Parts of Middlesex, Surrey and Kent are now included in London, though many of the villages which have been absorbed still retain their old names, as Chelsea, Lambeth and Hampstead. The present area of the administrative county of London is 75,442 acres. The Thames flows through the city and is crossed by several bridges, Waterloo, London, Vauxhall and Westminster, with Blackfriars, Victoria, Albert, Tower, Lambeth and Southwark being some of the best known bridges. There are several tunnels, including Blackwell Tunnel, under the river, and wide embankments on both sides, forming fine roadways, besides ferries across the river, such as Woolwich Ferry, which has an annual passenger traffic of more than 5,000,000. The river steamboat service embraces 30 boats licensed to carry 500 passengers each. The North Metropolitan Electric Company runs a service of 48½ miles; while on the south side of the Thames there are 25 miles of horse and 28¼ miles of electric traction service. Besides these transit facilities there are now those of the tube (underground) railways, and the vast systems of the above-ground roads leading to all parts of the kingdom and far extending suburbs. There today are about 550 railway stations within the area of Greater London; the number of mechanically propelled vehicles in the city is about 2,500. There are many large parks: Hyde Park is the site of the Albert Memorial, the finest modern monument, with marble groups, reliefs, frescoes and 169 sculptured portraits of great poets and artists; Regent's Park has the finest zoological garden in the world; St. James Park with Buckingham Palace; Green Park with a statue of Wellington; Victoria Park and Alexandra Park are a few of the best-known, besides a number of botanic gardens, as Kensington and Kew Gardens. There are a large number of squares, among them Lincoln's Inn Fields, Trafalgar, with Nelson's monument, Belgrave and Grosvenor Squares. Regent Street, a favorite resort of shoppers, is the handsomest street in London, and Cheapside, Bishop's Gate and Leadenhall are among the most crowded. Buckingham, St. James and Kensington Palaces are the city residences of the sovereign, including Marlborough House which was wont to be occupied by King Edward VII, when Prince of Wales. Lambeth Palace is the official home of the Archbishop of Canterbury, while Fulham Palace is the residence of the Bishop of London. The parliamentary buildings called Westminster Palace, at Westminster, cover eight acres and have 1,100 rooms. The cellars are searched two hours before the sovereign arrives to open parliament, and have been so searched ever since the era of Gunpowder plot.

St. Paul's Cathedral and Westminster Abbey are the best known of the more than two thousand churches. St. Bartholomew the Great is one of the most ancient, dating from 1102; St. Giles', Cripplegate, another old church, is the burial-place of Milton; St. Mary le Bow, with its far-reaching bells, gave rise to the saying "born within the sound of Bow bells;" St. George's Church in Hanover Square is used for the most fashionable marriages in London. Whitefield's Chapel, built in 1756, Rowland Hill's Chapel, opened in 1783, and Spurgeon's mammoth Tabernacle are other interesting churches. The St. George and Westminster Cathedrals of the Roman church are magnificent structures. St. Paul's Cathedral, standing on the site of the old church which was burned in 1666 was finished in 1710; its dome is one of the largest in the world, and its bell is ten feet across. The tombs of Wellington and Nelson are in the crypt. The annals of Westminster Abbey reach back to the 7th century, though a large part of the present building was finished in the 13th. It is shaped like a cross. In Poets' Corner are monuments to many of the great poets of England. The University of London, University College, King's College, St. Paul's School, Charter House School, Westminster School and City of London School are among the numerous educational institutions. The British Museum, the largest in the world, South Kensington Museum, with schools of art and music and magnificent collections, and Royal Albert Hall, the Indian Museum and Soame Museum are worthy of mention. There also are large libraries in the British Museum, the East India House, the circulating library of St. James Square and others. The national gallery of paintings, national gallery of portraits, royal academy of arts, of which Sir Joshua Reynolds was first president, Dulwich Gallery and the Crystal palace at Sydenham are notable collections of art. The Tower of London is the only fortress in the city, and has barracks for several thousand soldiers. It contains the royal jewels; the traitor's gate through which Raleigh, Sidney and others entered the Tower, and the bloody tower opposite the gate are points of historical interest.

The main manufactures are silk, carriages, clocks, watches, jewelry, books and musical instruments. But enormous trade is what makes London the wealthiest city in the world. London now has 37 refrigerating stores, with a combined capacity of storing 2,780,500 carcases. Its annual imports of meat approximate 5,000,000 carcases of frozen mutton, 3,600,000 carcases of lamb, and 1,400,000 quarters of beef. The principal markets of the metropolitan area number nine, Billingsgate, Leadenhall and Smithfield being the chief of these. London returns 59 members to parliament. Its theaters are famous and these, with music halls and "movie" shows, have a nightly seating capacity of many hundred thousand. The yearly expenditure of the London county-schools now exceeds 25 million dollars, there being nearly 1,000 public elementary schools, with 700,000 pupils and an average attendance of 600,000. The traffic receipts of the London transportation companies amount to half a billion pounds per year. For its own use for food London annually requires 400,000 oxen, 1,500,000 sheep, 8,000,000 head of poultry, 400,000,000 pounds of fish, 500,000,000 oysters, 180,000,000 quarts of beer and 30,000,000 quarts of wine, and it burns 6,000,000 tons of coal. The best retail stores are on Regent Street, Bond Street and the Strand, while there are large markets for meat, fish and provisions of all kinds. Billingsgate is the great fish-market, and has been known since the time of Elizabeth, while the Ragfair is a market devoted to the sale of old clothes. The foreign trade largely exceeds that of any other port in the world, and vessels with an aggregate tonnage of 18 million tons enter every year. The daily water-supply for the seven million inhabitants of London amounts to over 250 million gallons — a daily consumption of nearly 50 gallons per head.

London probably was founded in 43 A. D. by a Roman governor of Britain. It was burned by the Britons under Boadicea in 61 A. D. The walls and fortifications date back to Constantine (*c.* 300). From 369 till 412 it was the capital of Britain, and called Augusta. Bede calls it a "princely town of trade," when it was the capital of the east Saxon kingdom. The real founder was King Alfred, who so restored the city, that the Danes were never able to take it. The city grew slowly; but by the time of Edward III was rich and prosperous and sided with the House of York in the Wars of the Roses. The principles of the Reformation were welcomed in London, and the suppression of monasteries and the confiscation of their property under Henry VIII made him popular at first, though the same treatment of the guilds lost him the favor of the citizens. Under Elizabeth the silk trade, driven from France, was established in England, the coinage was reformed, and new openings for adventure in America and India gave a great impulse to trade. The city suffered from the extortion of Charles I, who seized the money of the goldsmiths deposited in the Tower and from many of Cromwell's impositions. It was almost ruined by Charles II, whom it had helped to restore to his throne. The plague, which had several times visited London, in 1665 destroyed one fifth of the population. The great fire of 1666, lasting five days, burnt 396 acres of houses. In 1694 the Bank of England was established; in 1760 the old walls and gates were torn down; and the streets were first lighted in the reign of Queen Anne.

London has 27 borough councils returning 227 aldermen and 1,362 councillors to the civic government. Its police force is close upon 16,000 men, and its fire brigade numbers over 1,300. Population 4,522,961; of Greater London (area 690 sq. miles) 7,252,963. See *Old and New London* by Cassell and *Walks in London* by Hare.

London, Ontario, a city of 46,727 people in Middlesex County, is 121 miles west of Toronto. Railway car shops are located here. Western University and one of the provincial normal schools attract many students. The main lines of the leading railroads pass through it. It is becoming an important manufacturing center.

London, Jack, novelist, a new force in letters, hailing from California, but a wanderer and "tramp" whose career was as romantic and exciting as that of any of the characters in his books. So realistic was he that he has been termed the New World Kipling. Born in 1876 in San Francisco, Mr. London studied for a while at the University of California, but early took to voyaging, serving as a sailor before the mast and generally pursuing a roving life, not only in this country and in Canada, but abroad, and that, chiefly on pedestrian tours. He also acted as a war correspondent during the Russo-Japanese War. Many of his books are frankly socialistic, especially *The War of the Classes* and *The People of the Abyss.* His novels and stories, which give insight into the hearts of undisciplined men, embrace *The Sea Wolf, The Call of the Wild, The Cruise of the Dazzler, The Son of the Wolf, Tales of the Fish Patrol* and *The Children of the Frost.* He died Nov. 22, 1916.

Lon'donder'ry or **Derry,** a city and seaport in the north of Ireland, 95 miles northwest of Belfast. It grew up around a monastery founded here in 546. In the Irish War of the Revolution of 1688 the gates of the city were closed against James II. The 105 days of siege that followed (April to August, 1689) form one of the most celebrated events of Irish history. The Protestant cathedral, dating from 1633, the Catholic cathedral, guild-hall, customhouse and a triumphal arch commemorating the siege are objects of note. Magee College was founded in 1865. Shirt-making factories, distilleries, iron foundries and shipbuilding are the principal industries. See Hempton's *Siege and History of Londonderry.* Population 39,892.

Long Branch, a famous bathing-place of New Jersey, on the Atlantic coast, 38 miles from New York City. The town extends 2½ miles inland from the shore. The large hotels are on a bluff above the beach, while many fine residences for summer homes lie between. Population 14,565.

Long Island, a part of the state of New York, lying between the Atlantic and Long Island Sound, is 115 miles in length and from 12 to 24 wide, covering 1,682 square miles. In the interior is a line of low hills and many small lakes, and on the south shore a series of lagoons. Game is still found there, and there are valuable fisheries and oyster beds, and large areas devoted to market-gardening; but much of the land is still waste, and Coney Island and other summer resorts are planted in deserts of sand. The principal city is Brooklyn, now a part of New York City. The island is separated by the sound from Connecticut. It was settled by the Dutch in 1632 and by the English in 1640. During the Revolutionary War the western end was fortified as a protection to New York, but, after a prolonged contest with British forces, Washington ordered the evacuation of the island, and it remained in the hands of the British until the close of the war. The battle of Long Island, fought on Brooklyn Heights, occurred on Aug. 27, 1776.

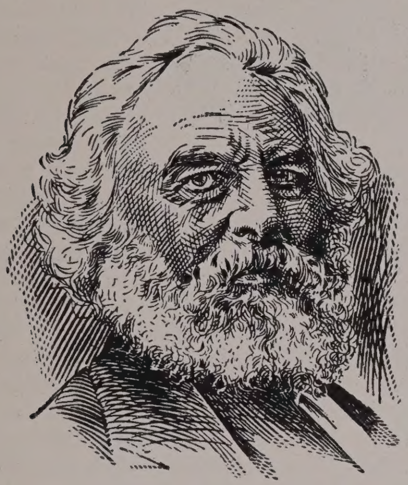
Long Island City, a suburb of New York City, on Long Island, was formed in 1870 out of five villages. There are manufactories of pianos, carriages, varnish and chemicals, hammers, boilers, steam engines, carpets, billiard tables, terracotta and macaroni. In fact, Long Island City is rapidly becoming the largest manufacturing center of the greater city. It has a large oil-trade and several refineries. The city is well-laid out with wide streets and parks, and has many fine residences. It is the first ward of the Borough of Queens of New York City. Within its borders are the borough-hall and the courthouse. Population 61,763.

Long Island Sound, lying between Long Island and the mainland of New York and Connecticut. It is from 2 to 20 miles wide and from 75 to 200 feet deep. The Thames, Connecticut, Housatonic and other rivers flow into it. It is navigated by a large number of vessels, and is well-provided with lighthouses.

Long Par'liament, the name by which the fifth parliament summoned by Charles I is known. It met on Nov. 3, 1640, and began its work by reversing all the tryannical and illegal acts of the previous 11 years It abolished the star-chamber and high-commission, and secured itself by passing an act that it could not be dissolved without its own consent. Colonel Pride drove 96 members, who were displeasing to the army, out of Parliament, and the remnant, called the Rump, continued to sit till Cromwell turned them out in 1653. Richard Cromwell failing to maintain authority, the Rump was recalled. Of the 160 members who continued sitting after the king's death, 90 returned to their seats. Proving again displeasing to the army, General Lambert turned them out. But there were dissensions among the officers of the army, and these members of Parliament were once more restored as the only body in the country having any kind of authority. After issuing writs for a new election, it dissolved itself March 16, 1660.

Long'fel'low, Henry Wadsworth. At the funeral of this best-loved of all our American poets, which occurred in March, 1882, Ralph Waldo Emerson was present. Four years older than his dead friend, the sunny philosopher of Concord died a month later. His mind had long been clouded. Now, as he gazed on the serene face framed with silver hair and beard, he turned to the grief-stricken people assembled in the library of Craigie House, and said: "He was a beautiful soul."

No more fitting epitaph could be inscribed on Longfellow's monument. He was a beautiful soul, and his poetry was a reflection of the goodness, sincerity and purity of his mind and heart. The man who was to win so unique a place in the affections of men was the natural product of an unspoiled New England. He was born in Portland, Maine, Feb. 27, 1807. Settled in 1632, Portland still retained much of its Puritan character in the simplicity of living and democracy of society. No one was either very rich or very poor. Good morals and propriety were expected; superior education and manners inspired respect. Imagination was given wider range in this busy seaport town than in the interior by the arrival and departure of sailing vessels in the foreign trade. In *My Lost Youth* the poet shows how early in life these things exercised their fascination on him. Upon his graduation from Bowdoin College, Maine, at 18, the way to a literary life was opened by the offer of a professorship in modern languages at his *Alma Mater*. Three years' study in Europe, during which he mastered the French, Spanish and German languages and literatures, fitted him for the position which he assumed at 21. Choosing literature as a profession as early and as definitely as did Lowell, Longfellow was later in finding himself. His studies and travels had led him to revere the great writers of the past and of foreign lands — especially of Germany, on which the shadows of Goethe and Schiller still lay. In comparison with these he distrusted his own powers. So, until he was more than 30, he mainly wrote prose of a poetic, mystic character, that showed the German inspiration. This, however, established his reputation as a scholar, and won his appointment to the chair of *belles lettres* at Harvard. In 1836, after another year abroad and the death of his young wife, he went to Cambridge. He secured a room in Craigie House which he afterwards bought, and this continued to be his home for 46 years. There he wrote *Hyperion*, which closed the first period of his literary life. This was in 1839. He had looked into the mind of Jean Paul Richter, when he wrote it, but although it was received with enthusiasm, he now took for his motto: "Look into thine own heart and write." Within a year he published a little volume of poems entitled *Voices of the Night*, which contained *The Psalm of Life*. Dumb, moral, prosaic New England, that cared more for virtue than for verse, had found a voice at last; one that was simple and musical and true, but that had an unknown charm and matchless art. The *Ballads* which followed contained *The Wreck of the Hesperus* and *The Village Blacksmith*.



HENRY WADSWORTH LONGFELLOW

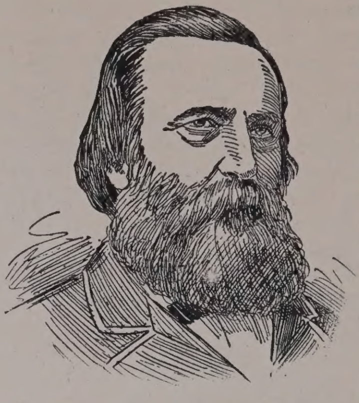
At the very height of his popularity Longfellow wrote his *Poems on Slavery*. The subject was bitterly discussed at the time, and the poet suffered by ranging himself on the side of the abolitionists. His muse was temporarily obscured. In 1842 he married again, bought Craigie House and became the center of a charming, cultivated circle in Cambridge. Here he shone at his best in his rare social gifts. In 1847 he published *Evangeline*, and rewon more than his old popularity at home. and became famous abroad for this "tenderest idyll" in the English language, as it was called by a critic. With *The Building of The Ship*, published when the Union had begun to be threatened, he appealed to patriotism in a noble way that endeared him to the people. Before the Civil War broke out he had published *The Golden Legend*, *Hiawatha* and *The Courtship of Miles Standish*. *Hiawatha* was widely discussed and attacked, both as a poem and as to its faithfulness to Indian legends. Its meter, new to English verse, was taken from *The Kalevala* the epic of Finland and of a primitive people, which made it seem so genuine an expression of the red man. It proved the poet's wonderful versatility. He was yet to draw inspiration from the Old World in *Tales of a Wayside Inn*. Really at home in Europe, familiar with modern languages, foreign manners, customs and literatures, he enlarged the field of our vision, stimulated historic imagination and quickened our sympathies. Foreign travel had not then become easy or common, and the tide of immigration had not yet set in strongly; so we had no sense of fellowship with the people of Europe and little feeling of our own historic past in lands beyond the seas. Longfellow supplied that lack, and widened and enriched the intellectual horizon of his time.

In 1861, while yet in his prime, Longfellow's genius suffered partial eclipse in the shock of his wife's death by fire. He occupied himself for five years in translating Dante's *Divine Comedy*. Honors crowded thick and fast upon him both at home and abroad, but he was not spoiled by fame. He remained simple, kindly, sincere. His last years were encroached upon by visits and letters from admirers. He helped many an obscure writer by advice and introduction. His "children's hour" was continued for all children long after his own were grown up. The school-children of Cambridge presented him, on his 72d birthday with a chair made from "the spreading chestnut tree." In his later years he collected the *Poems of Places* from all lands and tongues, a monumental task; and in 1880 he published his last volume of poems, — *Ultima Thule*. On the title-page was a motto from Horace — the prayer for an old age with unimpaired mind, not without honor nor lacking song.

The prayer was granted. After six months of failing health but unimpaired faculties the end came suddenly, a month after his 75th birthday. A beautiful soul, a beautiful life, a beautiful art nobly used — all were his. Whatever side of him one contemplates, he is helpful and inspiring. His memory is kept green by annual observance of his birthday in the public schools; and Craigie House is one of our few American shrines. His daughter Alice, the "grave Alice" of *The Children's Hour*, now an old lady, is the guardian of its hallowed treasures, and receives the thousands of pilgrims who visit it each year. See *Life* by Samuel Longfellow.

Lon'gitude in geography is the angle at the pole between the meridian passing through Greenwich observatory, England, and the meridian passing through the observer's place. Since this angle is exactly proportional to the time required for the earth in its rotation to carry one meridian into the position formerly occupied by the other, we may define the difference of longitude between two places as the difference of their local times. Hence longitude is the amount by which noon at Greenwich is earlier or later than noon at the observer's place. Longitude may be determined by various astronomical methods, but either the mechanical or electrical method is usually employed. The simplest method is to carry a chronometer, set to Greenwich time, to the station under consideration. The reading of the chronometer at noon at this station will be the longitude of the station. This is the method almost exclusively used at sea. The most accurate determination is made by telegraph.

Long'street, James, a Confederate General, was born in South Carolina in 1821. He graduated at West Point in 1842, and fought in the Mexican War, being wounded at Chapultepec. He entered the Confederate service in 1861, serving under Beauregard. He fought in the first battle of Bull Run, and at the battle of Seven Pines (May 5, 1862) he gained distinction. In the battles of Cold Harbor and Frazier's Farm his division of 10,000 men lost over 4,000 in killed and wounded. With the rank of major-general he had charge of the army of northern Virginia, and helped to secure the victory at the second battle of Bull Run. He was in the battles of Antietam, South Mountain, Fredericksburg and Chancellorsville, and commanded one of the three corps of the army that invaded the north and fought the battle of Gettysburg. Sent to Tennessee, he was in time for the victory of Chickamauga, but returned to the eastern army under Lee in March, 1864. Mistaken for a Union officer, he was severely wounded by his own soldiers in the battle of the Wilderness, and only returned to service in time for the final battle of Petersburg and the council of war which decided to surrender the Confederate army. Known as Old Pete, he was considered the hardest fighter in the Confederate service. He was named minister to Turkey in 1880, and in 1898 was appointed commissioner of railways. He died on Jan. 2, 1904.


GENERAL LONGSTREET

Loo-Choo (*lōō-chōō'*) **Islands** (also called Liu-Kiu or Riu-Kiu), a group of islands extending in a southwesterly direction from Kiūshū in Japan. They are essentially Japanese, as their language and religious customs show. China holds a reserved claim upon them, but they really are a part of the Japanese empire. The people do not shave the hair, as do the Japanese, but pin it on the crown of the head with a star in front. The women tattoo their hands. The streets are paved with stone, and the houses are inclosed with walls ten or twelve feet high, which give the street a desolate appearance. There are no shops or storerooms in the towns, only a market-place for each town. The food of the people consists chiefly of sweet potatoes, pork and fish. Sugar and an aromatic orange are raised, and a small breed of ponies is found. The area is 950 square miles, and the population is estimated at 455,000.

Loon, See Diver.

Lope de Ve′ga. See Vega Carpio.

Lopez (*lō′pȧs* or *lō′pȧth*), **Narcis′o, Cuban** revolutionist, was born in Venezuela in 1799. He served many years in the Spanish army, first in Venezuela, later in Cuba, after the Spanish troops left Venezuela in 1822. In 1849 he came to the United States with a plan for annexing Cuba. He said the Creoles were tired of the Spanish yoke and ready to throw it off. Lopez at the head of the revolutionists made three attempts against Cuba. In 1849 the watchfulness of the United States authorities prevented their making a descent upon the island. In 1850 they made a landing at Cardenas, but were driven to sea. In 1851 Lopez sailed from New Orleans with 500 men and landed at Murillo in Vuelto Abajo. But the people did not rally around them as expected. Many were killed, and 50 were captured and shot at Havana. Lopez with the remnant fled to the woods, but he was captured and on Sept. 1, 1851, strangled at Havana.

Lorain′, O., in Lorain County, a city at the mouth of Black River, on Lake Erie, 25 miles west from Cleveland, in the natural-gas region and the grape-growing belt, is distinctively an industrial city. It has an excellent natural harbor more than three miles in extent, which with the Nickel Plate, B. and O., Lake Shore and Wabash railroads furnishes splendid shipping-facilities for its extensive industries. Large quantities of coal, brought by the railroads, are reshipped by boat to the upper-lake cities. The National Tube Co.'s plant, employing more than 8,000 men, manufactures steel rails, steel tubes and billets. The largest boats on fresh water have been built at the Lorain yards of the American Shipbuilding Company. The Thew automatic steam-shovels, gas-engines, refrigerating machinery, gas and gasoline stoves are manufactured here. A heavy storm accompanied by a tornado, severely damaged the city in 1924. The present population is 50,000.

Lorelei (*lō′rȧ-lī′*), a rock rising perpendicularly 427 feet from the Rhine near St. Goar It has a celebrated echo, and used to be dangerous to boatmen. The name is best known from Heine's song of the siren, who sits on the rock combing her long tresses and singing so ravishingly that the boatmen, enchanted by the music of her voice, forget their duty and, drawn against the rock, perish.

Loreto (*lō-rā′tō*) or **Loretto,** a city of Italy, situated three miles from the Adriatic and 15 from Ancona. The city is chiefly noted as the site of the sanctuary of the Blessed Virgin called the Santa Casa, which is reputed to be the house in which the Virgin lived at Nazareth, miraculously [illegible] in 1291 to Fiume in Dalmatia; in 1294 to a place near Recanati in Italy; and finally carried to Loretto in 1295. This Holy House is a single apartment of no great size, originally rude in construction, but now cased with white marble and exquisitely sculptured. The image of the Virgin which it contains is traditionally believed to have been carved by St. Luke. The shrine is visited annually by about 50,000 pilgrims, though formerly the number reached 200,000 a year. The church of the Santa Casa has a great central door, with a bronze statue of the Madonna above it, and three bronze doors with bas-reliefs within. Population 4,134.

Lorne, John Douglas Sutherland Campbell, Marquis of, a British statesman and, since 1900, duke of Argyll. He was born at London, Aug. 6, 1845, and was educated at Eton, St. Andrew's University and Trinity College, Cambridge. He was elected to Parliament as a Liberal in 1868. In 1871 he married Princess Louise, the sixth child of Queen Victoria, and was governor-general of Canada from 1878 to 1883. He has written *The Book of Psalms*, literally rendered in verse; *A Trip to the Tropics; Guido and Litta; Memoirs of Canada and Scotland;* and *A Life of Lord Palmerston.*

Lorrain′, The Right Reverend Narcisse Zaphirin, was born at St. Martin, Laval County, Quebec, 1842 and began his classical studies in the College of St. Therese, which has trained not a few successful men. His student career was a brilliant one. Ordained priest at Montreal by Bishop Bourget in 1867, in 1869 he was appointed parish-priest of Bedford, New York, and was called to Montreal in 1879. In 1880 he was appointed Vicar-General of the Diocese of Montreal. In 1882 he was consecrated Bishop of Cythera, and removed to Pembroke, where he was to reside as Vicar-Apostolic of Pontiac. Under his guidance as Pembroke's first bishop, numerous substantial churches have been erected, and many others enlarged and improved. The diocese comprises an immense territory, including the counties of Pontiac and Renfrew. It comprised 33 churches, 37 chapels, four convents and three hospitals. The 25th anniversary of Bishop Lorrain's consecration was celebrated on September 21, 1907. Appreciative addresses from the laity, the town-council and the board of education were presented.

Lorraine (*lŏr-rān′*), a country in Europe which at first included Alsace and Friesland and the lands between the Scheldt, Meuse and Rhine. In 954 Lorraine was divided into Upper and Lower Lorraine. The latter, known as Brabant, now forms part of the kingdom of Belgium and the provinces of Brabant and Guelderland in Holland. Upper Lorraine in 1766 was united to France, and afterward subdivided into the departments of Meuse, Moselle, Meurthe and Vosges. The district between

Metz and the Vosges, which is called German Lorraine, was ceded to Germany in 1871. It has rich coal and iron fields.

See Alsace-Lorraine.

Los Angeles (*lōs ăn'gĕl-ĕs,* or *lŏs ăn'jĕl-ĕs*), the seat of Los Angeles County and the largest city in California, is situated in the southern part of the State, 475 miles southwest of San Francisco, and 127 miles north of San Diego. The heart of the city is about fifteen miles inland from its extensive harbor on the Pacific Ocean and the curving coastline, a long expanse of beach dotted with famed resorts. In 1931, Los Angeles had reached a peak of expansion, with more land within its limits than any other city in the United States. The city with its suburbs extends over an area of 442.5 square miles.

Description. This metropolis of southern California is built on an undulating site, rising to steep hills in the northern part. The surrounding region is like a great park. The Sierra Madre Mountains rise ten miles to the north. Throughout the city are beautiful boulevards lined with palms and evergreens. In the frostless air under the warm sun of California delicate flowers bloom even in winter. Los Angeles is famous for its beauty and its healthful climate. The city boasts a total of 4,000 acres of park area, 3,000 of which lie beyond the city limits. These parks are beautiful with semi-tropical foliage. Griffith Park with an area of 3,751 acres, is the largest municipal park in the United States. Situated at the northern boundary of the city, it is lovely with hills and woods, through which wind miles of roadways of great scenic beauty. There is a zoölogical garden and golf links in Griffith Park. At Exposition Park, in connection with the Museum of Art and Science, is a collection containing some of the rarest fossils in the United States. The city has magnificent botanical gardens. Other noted parks and gardens are Central Plaza, Elysian, Westlake, Eastlake, Hollenbeck and Echo. Near old Plaza Park in the northern part of the city are Chinatown and the Mexican settlement.

Los Angeles is a terminal for several national motor routes, and a center for California highways. Roads of scenic beauty branch out in every direction, on which tourists travel back to the mountains, up to Beverly Hills, or along the coast to the many pleasure and health resorts. Santa Monica, Ocean Park, Venice, Palisades del Rey, El Segundo, Manhattan Beach, Hermosa Beach and Redondo Beach form a chain from north to south, beginning almost opposite Beverly Hills and continuing to Point Vicente, around the southern extremity of which is Long Beach, on the extensive Los Angeles Harbor. Just a short steamer ride away is Catalina Island, with its famous glass-bottomed boats and marine gardens.

The Harbor. Los Angeles has an absolutely safe and protected harbor, which is city-owned and controlled. It can be entered in any kind of weather by vessels under their own power. In addition to twenty-one and one-half miles of municipal wharves, there are long stretches of private wharves. A great breakwater, built by the United States Government at a cost of $3,500,000, protects the city from the rare Pacific storms. In 1922 and 1923 a total of almost $7,000,000 was spent in harbor development, which included dredging and building wharves and warehouses. This improvement transformed Los Angeles from an agricultural community to an industrial and commercial city of importance.

Transportation. Los Angeles is ideally situated on the Pacific coastline with an excellent harbor, and access to shipping lines all over the world. Due to the development of the oil industries in adjacent districts, Los Angeles exceeds New York by more than fifty per cent in intercoastal commerce. The Panama Canal affords close communication with the Atlantic, and has brought the city near the route of vessels going to and from that ocean to the Orient. These things have made the city an important port connected with all the prominent world harbors. Six transcontinental railways enter Los Angeles, supplemented by several branch lines and an extensive electric suburban system. Motor-bus systems also aid in transportation across the continent to New York, north to Canada, and south to Mexico. The city is a western terminal for transcontinental air mail and several transcontinental passenger lines, as well as passenger lines north. There is a modern and extensive street railway system, and many wide automobile highways leading to all the points of interest in the country, as Los Angeles is a tourist center for the southwest.

Buildings. This park-like city has many fine shops and skyscrapers, some of them outstanding creations of architecture scattered along its magnificent thoroughfares. One of the most attractive of the public buildings is the Huntington Library and Art Gallery, in Spanish Colonial architecture, with a forecourt of beautiful gardens. Among the many attractive outdoor reading spots is the "Peter Pan Children's Room" unique in its setting and appeal. Other prominent buildings include the Federal Building, the Armory, the Shrine Auditorium, The Blanchard Art Building and the Roman Catholic Cathedral.

Industry. Los Angeles is the capital of the moving-picture industry in the United States, centered in Hollywood. The need for constant sunshine, a healthful climate, and varied scenery brought the industry to the city. Los Angeles has an exceptional climate, a supply of pure drinking-water through a 209-mile aqueduct from the Sierra Nevada Mountains, and within small space a varied and beautiful scenery. The vast motion-picture industry and the enormous tourist trade have brought much capital to the city which makes it very important to banking.

One of the world's largest oil fields uses Los Angeles as a central distributing point. It is also headquarters for the mining industry of southern California and nearby Arizona, Nevada, Utah and Mexico, which bring gold, silver, copper, lead and quicksilver into the city. Los Angeles is also a marketing center for a great agricultural district, from which come fruits such as oranges, lemons, grapefruit, apricots and peaches. The first outstanding success in co-operative farm marketing was made in this district, in the distribution of oranges. Prunes, grapes, walnuts, summer and winter vegetables, grain, and cotton are important products. Poultry, fur-rabbits, live-stock and dairy products are among the other industries. Cheap fuel and power in crude petroleum and hydro-electric power stimulate important manufactures in Los Angeles which include oil-well and mining machinery, automobile tires and parts, furniture and wooden products, clothing, textiles, canned fish, chemicals, drugs, and fertilizers. In recent years Los Angeles has become famous for its well-organized relief plan by which idle labor is exchanged for excess crops, and the unemployed live off the surplus. In 1926 a club for industrial workers was organized by the Los Angeles Y.M.C.A., out of which grew the first summer school for industrial workers, which includes in addition to general courses, such studies as labor economics, and the history of the labor movement in America.

Population. Los Angeles is one of the most rapidly growing cities in the United States. In the year of Abraham Lincoln's election to the presidency, the city had a population of 3,700. In 1880 this number had increased to 11,311; by 1910 to 319,198; by 1920 to 576,673. In 1930, after the enlarging of the harbor and the development of the motion picture industry, the population numbered 1,238,048.

Education. Los Angeles has one of the most modern public school systems of any state in the Union. There are a large number of private schools and colleges. Among the institutions of higher learning, the most important is the University of Southern California, which was founded in 1880, and had, in 1933, an enrollment of 9,000 students and a faculty of 450. The University of California at Los Angeles, formerly a State normal school, had a student body of 7,168 and a faculty of 325. Other important institutions of higher learning are St. Vincent's College, Occidental College, and the McClay College of Theology.

Government. The city of Los Angeles is governed by a Mayor who is elected biennially, assisted by a unicameral council of nine members, and a number of commissions which are appointed by the Mayor with the consent of the council.

History. Los Angeles was founded by the Spanish in 1781, who named it appropriately *Puebla de Nuestra Senora, la Reina de los Angeles* (City of Our Lady, the Queen of the Angels). English-speaking people abbreviated it almost immediately to *Los Angeles.* The Spanish population is rapidly disappearing. Until 1847, this city alternated with Monterey as the capital of the Mexican province of California. In 1846, General John C. Fremont with United States troops took possession of the community. An uprising of the inhabitants recaptured the town, but it was taken again by General Stephen Kearney in 1847. In 1851, Los Angeles was chartered as a city. When the Santa Fe railroad was completed in 1885, the city received a great impetus toward its present development. The improvement of the harbor and the rapid growth of the motion-picture industry have completed the advance of this splendid city.

Lost Battalion, the First Battalion of the 308th Infantry and elements of the 307th and the 306th Infantry Machine Gun Battalion of the 77th Division in the World War. These men were commanded by Major C. W. Whittlesey. In the Meuse-Argonne battle of October, 1918, they were entirely surrounded by the Germans at the bottom of a ravine one and one-half miles northeast of Binarville. They were announced by the press as the "Lost Battalion," but in spite of heavy casualties they held out until they were relieved after five days by the 154th Brigade.

Lost Tribes, The, a term used in Biblical history to indicate the ten tribes of Israel who disappeared about 140 years before the general dispersion of the Jews, leaving only the tribes of Judah and Benjamin. It is well-authenticated that many of the North Palestine inhabitants were taken captive during the last years of the kingdom of Israel. There was a deportation in the reign of Pekah; no less than 27,000 persons were taken to Medea and Mesopotamia after Samaria fell in 722 B. C.; and Babylon took captive many of the kingdom of Judah in 587 B. C. The Scriptures carefully narrate the return of those of the tribes of Judah who were taken captive, but there is no record of the fate of the members of the northern kingdom. The ten tribes comprising Israel simply disappeared from history. Speculations of later investigators have re-discovered these tribes among the North American Indians, early inhabitants of Great Britain, the Anglo-Celtic peoples, the Japanese, and natives of Peru, Australia and Tartary. Other scholars believe they were assimilated by their captors, which seems most reasonable.

Lot, an ancestor of the Moabites and Ammonites, and a nephew of Abraham, who went with him to Canaan. Quarrels between their shepherds caused them to separate. Lot chose the well-watered region of the Jordan and went to Sodom, but was warned in time to escape its destruction.

Lothrop, Harriet Mulford (STONE), an American author, was born in New Haven, Connecticut, in 1844. She was educated in private seminaries, and under the pen name of *Margaret Sidney* became a successful writer of popular books for children. The most famous of these is the *Pepper* series, beginning with *Five Little Peppers and How They Grew,* published in 1882, and followed by ten others. She wrote many other children's books, including several on historical subjects, such as *The Minute Man,* and *A Little Maid of Boston Town.* In 1881, she was married to Daniel Lothrop, a prominent publisher. She is well-known as the founder of the National Society of the Children of the American Revolution, in 1895, of which she was president until 1901, when she was elected honorary president for life.

Loti (*lō-tē'*), **Pierre** whose real name was Louis Marie Julien Viand, a brilliant novelist and captain in the French navy, was born in Rochefort on January 14, 1850. He entered the marine service and travelled widely until 1898, when he resigned his captaincy. He wrote in the style of the impressionistic school, using exotic settings, chiefly from his travels. He became a member of the French Academy in 1891. Among his best known and most widely read works are *Le Roman d'un enfant; Le Mariage de Loti; Pecheur d'islande; Propos d'exil,* and *Les Désenchantées.* He died in 1923.

Lotteries, a species of gambling wherein the holders of certain numbers have prizes apportioned to them by a drawing of chance. In the United States the largest scheme of this kind was the Louisiana lottery supported by the Constitution of that State on the payment of a certain amount annually into the State's treasury. In 1891, the Constitution was amended, prohibiting the lottery. Louisiana was the last State in the Union to abolish lotteries. In 1899, lotteries were forbidden by law in Alaska, in 1900 in Hawaii, and in 1902 in Puerto Rico. Some states have slight modifications of the anti-lottery law. Federal laws prohibit the passage of any lottery matter through the mails.

Lotus, a name applied to the most widely different plants. The *Lotus* of botanists is a genus of about 100 species found in temperate regions and belonging to the well-known pea-family, a genus probably not known at all in a popular way. The lotus referred to by the Greeks probably was the species (*L. corniculatus*) spoken of to-day as the bird's-foot tree-foil. The African lotus has given certain tribes the name of lotus-eaters, and the fruit was said to be the size of an olive and to have the sweetness of honey and the taste of a date. A number of shrubby desert forms have been pointed out as the probable lotus of the lotus-eaters. The Egyptian lotus, the sacred lotus of the Nile, is *Nymphæa lotus,* a large water-lily with rose-colored as well as white flowers. The Hindoo and Chinese lotus, also called the sacred bean, is a *Nelumbo,* another genus of the water-lily family. The common use of the name to-day is two-fold: to designate the delicate and lovely water-flower, and to refer to mythology, in which the fruit of the lotus was eaten and caused a state of dreamy content and forgetfulness, as in the *Odyssey.*

Lotze (*lōt'sē*), **Rudolf Hermann,** a noted German philosopher, was born at Bautzen in Saxony on May 21, 1817. He studied at Leipzig, and became professor of philosophy at the university there in 1842 and at Göttingen in 1844. He first attracted attention as a physiological writer, contributing articles to the *Handbook of Physiology.* His *Metaphysics* was published in 1841 and his *Microcosmos,* giving his views of nature and man, in 1856-64. It is sufficiently popular in style to be read by general readers. His *General Physiology of Life,* published in 1851, dealt with the phenomena of life. His philosophy is a teleological idealism, with an ethical foundation. Lotze died at Berlin on July 1, 1881.

Loubet (*lōō-bĕ'*), **Émile,** a prominent French statesman and the seventh President of the Republic, was born at Marsanne on December 31, 1838. He early studied law and practiced at Montelimar, at the same time taking a prominent part in public life. He was Mayor of Montelimar from 1870 until 1899. In 1876 he was elected to the chamber of deputies as a Republican; in 1885 to the Senate, of which he became president and also president of the council. In 1887 he became Minister of Public Works in the cabinet of M. Tirand. During 1892 he served as Premier and Minister of the Interior, and president of the Senate again in 1896 and 1898. On the death of President Faure in 1899, Loubet was elected to succeed him as head of the Republic. During his term of office which lasted until 1906, he was popular with all classes and greatly respected and liked. His presidency is chiefly noted for the establishment of cordial relations with Russia, Italy, and Great Britain. He died in 1929 at the age of ninety-one.

Loughborough (*lŭf'bŭr-ō*), a municipal and manufacturing borough, is situated in Leicestershire, England, on the left bank of the Soar, eleven miles northwest of Leicester. The Church of All Saints has a beautiful sixteenth-century tower. The chief manufactures include bell-founding, dyeing, brickmaking, hosiery, and machinery. There is an active coal trade in the borough. The population in 1931 was 26,945.

Louis IX or **St. Louis,** a king of France, was born at Poissy, on April 25, 1215. He succeeded his father, Louis VIII, and became king in 1226. During a dangerous illness he made a vow that he would go as a crusader if he recovered. Consequently, on recovery he appointed his mother regent in 1248 and sailed with 40,000 men for Egypt, thinking by its conquest to take Palestine. He, however, was taken prisoner by the Mohammedans, but freed in 1250 by the payment of a heavy ransom. He remained abroad until his mother's death compelled him to return to France. He founded the Sorbonne, a theological college at Paris. He decided the relation of the French church to the Pope; and introduced a code of laws taking his name. He undertook a second time to go to the east as a crusader, but during this expedition he died from pestilence, near Tunis, Aug. 25, 1270 He was made a saint of the Roman church. See *Life* by Wallon.

Louis XI, oldest son of Charles VII, born at Bourges, July 3, 1423, from his boyhood was cruel, tyrannical and treacherous. He made unsuccessful efforts to wrest the throne from his father. On his accession in 1461 his severe measures against his vassals stirred them up against him. With them he was artful, yet treacherous. He succeeded in arousing the Swiss republic to take up arms against Charles the Bold, and from that time French kings employed Swiss mercenaries. In 1482, by treaty, Burgundy and Artois were handed over to France and Provence was annexed to the crown. He increased the number of parliaments and gave the middle classes a voice in state matters, in order to weaken his feudal vassals, and founded three universities. He died near Tours, Aug. 30, 1483. after suffering great misery for years from terror of death.

Louis XIII of France, was born at Fontainebleau on Sept. 27, 1601. When his father, Henry IV, was assassinated in May, 1610, he succeeded to the throne, but his mother, Marie dei Medici, was regent during his youth. The Huguenots rose against her alliances with the pope and Spain, but concluded a peace in 1614 When the king was declared of age, he confirmed the Edict of Nantes and summoned the states-general for the last time until the reign of Louis XVI. By some concessions to the Catholics a religious war was provoked, which ended in 1622. Under the guidance of his great minister, Richelieu, the weak king gradually increased the power of the monarchy at the expense of the Protestant nobles, ending in the overthrow of the Huguenots by the capture of La Rochelle in 1628. In the Thirty Years' War Louis sided with Gustavus Adolphus against Spain and Austria. His acquisition of Alsace and Roussillon was confirmed in the next reign. He died on May 14, 1643. See *History of France* by Yonge.

Louis XIV, surnamed *Le Grand*, was born on Sept. 16, 1638, and succeeded his father in 1643, his mother becoming regent. with Mazarin as her minister. In 1660 Louis married Maria Theresa. Little was expected from the king, as his education had been neglected and his conduct was dissolute. But in 1661 he suddenly assumed the reins of government and ruled with rare energy. His *mot*, "I am the state," became famous, and was the principle of his government. His ministers, Colbert and Louvois, helped him to restore prosperity. To the territory of France he added Lorraine, part of the Spanish Netherlands and Strassburg, a free German city. He fell under the control of Madame de Maintenon, who led him to severe measures against the Protestants By the revocation of the edict of Nantes more than half a million of the best citizens of France left it carrying their skill and industry to other lands. The death of Charles II of Spain having taken place on Nov. 1, 1700, it was found that Louis had obtained his signature to a will leaving his dominions to one of the grandsons of his sister, who had been Louis' queen. This plunged Europe into the war which ended with the Peace of Utrecht, 1713. He died on Sept. 1, 1715. His reign is regarded as the Augustan age of French literature and art. See *Louis XIV and his Court* by Pardoe.

Louis XV, great-grandson of Louis XIV, was born in 1710 and succeeded to the throne in 1715. The duke of Orleans was regent during the king's minority. At the death of the regent Louis reigned personally, putting at the head of affairs Cardinal Fleury, who set his face against a warlike policy, but after his death France united with Prussia and won many victories. Louis fell under the influence of Madame de Pompadour, to whom he issued notes for enormous sums on the treasury. He formed an alliance with Austria, which ended in the defeat of France by Prussia. The king, when told of the ruin of the country and the discontent and misery of the people, replied that the monarchy would last as long as his life. By the treaty of Paris (1763) France lost Canada and Louisiana. He died in 1774. See *Secret Memoirs of Madame de Pompadour* by Beaujoint.

Louis XVI, born at Versailles, Aug. 23, 1754, was the grandson of Louis XV. In the midst of a corrupt court he grew up temperate, honest and moral. He inherited an empty treasury, an enormous debt and an exasperated people. Personally full of good will he failed to restrain his brothers and to resist the influence of his proud wife, Marie Antoinette, whom he married in 1770. Voltaire hailed some reforms of Louis' ministers "as the dawn of the age of reason." They were accepted by the king but were rejected by court, aristocracy, parliament and church. Yet Louis accomplished the remission of some odious taxes, the abolition of serfdom, the abolition of torture in courts of justice, a reduction of the expenses of the court and the foundation of institutions for the benefit of the working classes. The privileged classes defeated his proposals for reform and compelled Louis' great director-general, Necker, to resign Necker's successor was forced to propose the same taxation of the privileged classes which Necker had proposed, and he, too, was compelled to fly. New assemblies were demanded. Necker was recalled, and by his advice the third estate was summoned. Necker did this to counteract the influence of nobility court and clergy. The assembly of the states met on May 5, 1789. Louis' subsequent history is that of the Revolution until January 21, 1793, when he died by the guillotine. His last words were: "I pray that my blood come not upon France."

Louis XVII, Louis Charles, titular king of France, and the second son of Louis XVI, was left in prison at the death of his father. There he was rudely separated from his mother and placed in the charge of a brutal Jacobin, who treated him with great cruelty. He became a wreck in body and mind, and died on June 8, 1795. Louis XVIII, in 1815, made many attempts to find the remains of this hapless boy, but failed. This fact gave rise to the appearance of false dauphins, whose claims deluded many honest royalists in France. Even in 1874 the children of one of these claimants raised fruitless actions before Paris law-courts against the Count of Chambord.

Louis XVIII, Stanislas Xavier, king of France, a younger brother of Louis XVI, was born at Versailles, on November 17, 1755. He fled from Paris on the same night as Louis XVI, and reached the Belgian frontier in safety. From his retreat he issued declarations against the revolutionsts which damaged the king. After the execution of his brother he proclaimed the dauphin king under the title of Louis XVII, and in 1795 himself took the title of king. The fall of Napoleon opened his way to the throne, and on April 26, 1814, he landed at Calais after twenty-four years of exile. He ruled by "the divine right of kings," but his rule was weak. The Revolution had taught him nothing, and his treatment of Protestants, republicans and followers of Napoleon opened the way for Napoleon's return from Elba, whereupon Louis XVIII fled into exile until after the battle of Waterloo. He was restored to the throne by the allied powers in 1815, and ruled until his death on September 16, 1824.

Louis Napoleon. See Napoleon III.

Louis Philippe (*lo͞o'ē fē'lēp*), king of France, was born at Paris on October 6, 1773, the oldest son of Louis Philippe Joseph, the duke of Orleans. With his father he renounced his titles and called himself Philippe Egalite (Equality). He became a member of the Jacobin Club, and, being proscribed for liberal views, was an exile for twenty years. He taught school in Switzerland and afterward spent three years in the United States. In 1814 he returned to Paris, when he received his great estates which the royal government had taken. Louis XVIII received him with much distrust, and the court regarded him with jealousy, but he was popular in Paris. The Revolution of 1830 having ended, he was appointed lieutenant-general mainly on the proposal of Lafitte and Lafayette. On August 9, he accepted the throne and was called to be king of France. In 1848 he was compelled to abdicate, and thus ended a reign remarkable for the wave of liberalism in which it took its rise and for the whirlwind of democracy that swept it away. He spent the remainder of his life in England, where he died on August 26, 1850.

Louisa of Prussia, known as The Good Queen, was born at Hanover, on March 10, 1776. She was the wife of Frederick William III and the mother of Frederick William IV and William I, kings of Prussia. She was very popular, her great beauty and dignity, added to her lovely character and wide benevolence, making her the idol of the people. She showed energy and resolution in the nation's trouble after the battle of Jena, and still further won the respect of the people by the manner in which she endured the conduct of Napoleon, whom she had visited at Tilsit, vainly hoping to obtain favorable conditions of peace for her country. She died on July 19, 1810. The Prussian Order of Louisa, The Louisa School for Girls and The Louisa Governess' Seminary were founded in honor of her.

Louisburg (*lo͞o'ĭs-bûrg*), a port on the southeastern coast of Cape Breton Island in Nova Scotia. It is now inhabited by a few fishermen, but the ruins of the old town are still visible. It was once regarded as the strongest fortress in America, until the English took it in 1758. Then the fortifications, which had cost France over $5,000,000 and had been thirty years in building, were destroyed. The town has a fine harbor, and is on the Intercolonial Railroad. The population of Louisburg in 1930 was 971.

Louisiana (*lo͞o-ē-zē-ăn'ȧ*), one of the west South Central or Gulf States of the American Union is situated on the Gulf of Mexico at the mouth of the Mississippi River. It is bounded on the north by Arkansas and Mississippi; on the east by Mississippi and the Gulf of Mexico; on the south by the Gulf, and on the west by Texas. Louisiana extends over an area of 48,506 square miles, 3,097 square miles of which are water.

Surface and Drainage. Louisiana is not characterized by high peaks or hills. The greater part of the land lies lower than the banks of the Mississippi. The highest land in the State lies to the north and northwest. Here alone does land exceed an elevation of 400 feet, along the hilly Coastal Plain which borders the alluvial bottoms. It has been estimated that one-third of the State is made up of the alluvial lands of the Mississippi and Red rivers. In the southeastern part of the State are the tracks of prairies and low ridges or coastal marshes. Since much of the land is lower than the banks of the rivers, powerful levees, or artificial embankments, have been constructed to prevent a constant overflow to which the land along the Mississippi is especially subjected. These embankments extend over a distance of 1,430 miles.

The "Teche Country" is that region in the State which lies near the scenic Bayou Teche. It was here that the "Cajuns" (Acadians) who were descendants of those Acadians in

Nova Scotia we read of in Longfellow's *Evangeline,* settled. The "Teche Country" entrances the onlooker. Here moss draped oaks bend low over the water's edge and bright hyacinths and vampire flowers lend color to the soft green surroundings.

The Mississippi River flows for a distance of about 600 miles through the State of Louisiana, a large portion of its delta below New Orleans being marshy and below its high-water mark. The Red River is the principal tributary of the Mississippi flowing through Louisiana. The Sabine River, bounding the State on the west, flows into Lake Sabine and thence through Sabine Pass into the Gulf of Mexico. The lakes, of which Ponchartrain is the largest, and other inland waters cover an area of about 3,000 square miles. Lake Ponchartrain is surrounded by land except at its outlet, but its waters are salt and rise and fall with the tides. There are 4,794 miles of navigable waterways in Louisiana. River traffic has been important in the South since the early days of American history. This has been particularly true of New Orleans, the chief city of Louisiana and economic center of the State, and although river traffic declined for a few years after the close of the Civil War, to-day it is being constantly increased.

Climate. A semi-tropical climate prevails in Louisiana, where warmth and moisture promote the most luxuriant growth of flowers and semi-tropical fruits. In the western part of the State the climate, as well as the soil, is drier than that found in other sections of the State. There is very little of the extreme winter's cold which is so characteristic of the northern states. The climate is deeply affected by the prevailing winds from the Gulf of Mexico. Although Louisiana enjoys a moist and warm climate, the heat is never oppressive in spite of the prolonged summers. The heaviest rainfall occurs in the southeastern part of the State, the average precipitation being fifty-five inches, while it manifests a marked decrease toward the northwest.

Minerals. Although the mineral resources of the State are few as compared with many other states in the Union, they are extremely important. Louisiana abounds in rich sulphur mines. To-day wells are in operation extracting the sulphur by means of hot water and compressed air. One of the richest sulphur mines in the world is situated in southwestern Louisiana in Calcasien County near Sulphur. The greater part of the sulphur produced in the United States comes from Louisiana.

One of the most important minerals in the State is petroleum, the discovery of which was made about fifty years ago. In 1931 there were 21,804,000 barrels of crude petroleum produced, and 58,034,000 gallons of natural gasoline or petrol. In 1930 the output of natural gas amounted to 278,341,000 M. cubic feet.

Production and Industry. Louisiana is predominantly an agricultural State, leading all states of the Union in several of their crops. It produces about one-half of all the rice grown in the United States and more than seventy-five per cent of the sugar cane. In spite of these facts more land is given over to the cultivation of cotton and corn and these prove to be the more profitable crops.

The State is divided into two sections—the higher ground found in the northern part of the State and the swamp or delta section at the mouth of the Mississippi River, which comprises one-third of the area of the State. It is in this swamp region that the sugar cane is grown. In 1932, there were 3,401,000 short tons of cane sugar produced and 4,844,000 gallons of sugar cane syrup.

The prairie region to the north has been turned into one large rice field, and is irrigated by the syphon method from the Mississippi River. In 1932 there were 16,536,000 bushels of rice produced.

Cotton is the most important crop of Louisiana. There were 1,816,000 acres under cultivation in 1932 which yielded 610,000 bales of cotton. In that same year there were 17,906,000 bushels of corn harvested, and 5,644,000 bushels of sweet potatoes—both of which were crops of high quality. The growing and marketing of strawberries for the northern markets is increasing each year and in 1932, 1,504,000 crates of this fruit were shipped.

Entirely suited to the semi-tropical climate is the production of many fruits from such districts, such as oranges, grapefruit, pomegranates, figs, nuts and olives. There are also large orchards of apples, pears and peaches.

In 1930, there were 161,445 farms in the State consisting of 9,355,437 acres, 4,741,000 acres of which were devoted to crops. The farms and buildings were valued at $418,912,000 in that year. The livestock industry is most important in Louisiana. In 1932 there were 106,000 horses; 189,000 mules; 140,000 sheep; 679,000 swine; 740,000 cattle; and 314,000 milch cows.

Louisiana ranks third among the states in the production of lumber. In the swamps are large forests of red and white cypress and the yellow pine, and in other regions forests of oak, red gum, cottonwood, tupelo, hickory, walnut, ash, and beech. Nine-tenths of the virgin forests, covering 22,000,000 acres, has been felled at least once, but the State is now taking care of its forests and protecting this great industry. The milling of sash and doors brings over $95,000,000 annually.

Huge oyster beds are found along the coast, stretching over 7,000 square miles. Louisiana leads all States in the Union in the production of shrimp.

Transportation. Louisiana has excellent transportation facilities. It has 4,639 miles of steam railroads, and 316 miles of electric roads, as well as 4,794 miles of navigable rivers. There are 24,900 miles of highways, 17,176 miles of which are maintained by the State.

Population. The population of the State in 1930 was 2,101,593 inhabitants, including 976,-

326 Negroes. Nearly two-thirds of the population is rural, although New Orleans, the largest city tabulated 458,762 people in 1930. Other large cities, with their populations in 1930, are: Shreveport, 76,655, and Baton Rouge, the capital, 30,729. The majority of the white population is descended from the early settlers of French extraction.

Most of the southern states are predominantly Protestant, but Louisiana has more than fifty-six per cent belonging to the Roman Catholic Church. Among the other denominations with large memberships are the Baptists, Southern Baptists and Methodists.

Education. Louisiana maintains separate public schools for white and negro children and elementary school education is compulsory. The school year of 1930-1 found 1,331 elementary schools for white children with an attendance of 282,337 pupils and 1,593 schools for Negroes with an attendance of 154,772 pupils. There are 363 high schools in the State for whites and four for Negroes.

The State has accomplished much in the last decade toward reducing the percentage of illiteracy. In 1920 Louisiana ranked first in the Union rating approximately twenty-two per cent, and in the ten years they have reduced it to thirteen and a half per cent. This is particularly commendable as the negro population increased nearly eleven per cent during those years, numbering 776,326 Negroes. In 1930 the illiteracy tabulation revealed that seven per cent native whites, nineteen per cent foreign born whites, and twenty-three per cent Negroes were illiterate.

Two normal schools and the State University are supported by the State. In 1933 there were 3,832 students, with a faculty of 193 at the University at Baton Rouge, which has a high scholastic standing. Tulane University, an endowed institution founded in 1834, receives partial State support, and had an enrollment in 1933 of 3,550 students and a faculty of 575 members. Other notable institutions of higher education are Loyola University in New Orleans, New Orleans University, and Straight University for colored students, also located in New Orleans.

Government. The State government comprises a legislature, consisting of thirty-nine Senators, and the House of Representatives of 100 members. They serve simultaneously and are elected for four-year terms. The legislature meets biennially. Louisiana is divided into sixty-four parishes, representing the same division as counties in other states. The Constitution under which the State is now ruled was adopted in 1913 and is the ninth one to be enforced. The governor, lieutenant-governor, secretary of state, attorney-general, treasurer and auditor represent the executive department of the State. Louisiana is represented in the National Congress by two Senators and eight Representatives.

History. Five different flags have waved over the region which is now known as the State of Louisiana. La Salle entered this territory in 1682, and took possession of it in the name of Louis XIV. It was first settled in 1699, and in 1717 the territory was turned over to John Law, a Scottish financier in France. He manipulated his well known Mississippi scheme, which collapsed in 1720, and the country was turned over to the crown in 1732. It was not until 1763 that France ceded the territory east of the River, excepting New Orleans, to England, while that country west of the River including New Orleans was ceded to Spain the previous year. In 1800 this entire territory was retroceded to France and sold by Napoleon to the United States as part of the Louisiana Purchase for $15,000,000. That region east of the Mississippi River was organized in 1804 and called the Territory of New Orleans. Louisiana was admitted to the Union as the eighteenth State on April 8, 1812. It was at New Orleans that General Andrew Jackson won so signal a victory over the British forces on January 8, 1815. Louisiana seceded from the Union in January 1862, and joined the Confederate forces. New Orleans was captured by the Union forces on April 24, 1862. More than one hundred battles of the Civil War were fought in Louisiana. Commercially, the State stood at a standstill until 1885. Since that date it has developed into one of the leading agricultural states in the Union. It ranked fifth in importance in its export trade in 1932.

Louisiana Purchase, The, the most important addition to the territory of the original thirteen states of the American Union. France, driven out of America in 1762, yielded to Spain the territory known as Louisiana, extending on both sides of the Lower Mississippi. Many American settlers were established on the river banks, and much produce went down the Mississippi to the Gulf. In 1800, Spain by secret treaty restored the territory to France. The treaty became known in 1802, and the Spanish Intendant refused the right to deposit goods at New Orleans. The settlers up the river demanded that American troops seize the city.

Robert E. Livingston and James Monroe began negotiations to purchase the territory at Jefferson's instigation. Napoleon was in dire need of money. Accordingly he sold Louisiana to the United States in December, 1803, for $15,000,000. The Louisiana Purchase included the present-day states of Arkansas; Missouri; Iowa; Minnesota west of the Mississippi; North Dakota; South Dakota; Nebraska; almost all of Kansas; Oklahoma; the sections of Montana, Wyoming, and Colorado east of the Rocky Mountains; and Louisiana west of the Mississippi but including the whole of New Orleans.

Louisiana Purchase Exposition. To commemorate the centenary of the purchase from France of the Territory of Louisiana in 1803, an international exposition was held at St. Louis, Missouri, from May 1, 1904, to December 1 of that year. The project of historically marking the acquisition of the vast region was locally discussed and agreed upon as early as May, 1901, when state as well as national authority and financial aid were secured for the scheme, a site chosen within the limits of St. Louis, including 1,300 acres in Forest Park and buildings erected. Much interest was taken in the exposition and its varied attractions, which included exhibits beautifully housed in an extensive series of appropriate buildings, many of them having symbolic as well as historical significance. Further interest was taken in the enterprise as the result of the large number of prizes awarded, consisting of gold, silver and bronze medals, diplomas and the like. The total of admissions was approximately twenty million; disbursements exceeded $31,500,000, an amount slightly in excess of the total receipts, including the sums received for concessions and other privileges. In September interest was added by a Congress of Arts and Sciences, at which papers were read or presented on appropriate topics.

Louisville (*lo͞o'ĭs-vĭl* or *lo͞o'ĭ-vĭl*), the largest city in the State of Kentucky, and the seat of Jefferson County, is situated on the Ohio River, fifty miles west of Frankfort. It is 130 miles by water and 110 miles by rail southwest of Cincinnati, Ohio. Louisville covers an area of about thirty square miles.

Louisville extends for seven miles along the south bank of the river, sixty feet above the low water level. Three magnificent steel bridges, the longest of which is the Louisville Bridge, link the city with the Indiana shore. The only inland Coast Guard Station in the United States is located in Louisville. The city has wide, well-paved streets, lined with handsome buildings, among which are the Court House, City Hall, Custom House, and the beautiful Roman Catholic Cathedral. There are 150 other churches, and many beautiful residences. The city is noted for its monuments to the Confederacy and its leaders. One of the finest park systems in any city in the Union is in Louisville. It comprises 1,500 acres. Iroquois Park, famous for its natural beauty, is the largest park in the city extending over an area of 670 acres. Cherokee Park, with 330 acres, is also noted for picturesque scenery. Riverview, Shawnee and Fontaine Ferry parks are situated on the river, with extensive bathing beaches.

Louisville is one of the largest leaf tobacco markets in the world. It also leads in the manufacture of cement, jeans and sole-leather, and has extensive pork-packing establishments and whiskey distilleries. Other industries include iron-works, the manufacture of agricultural implements, cigars, and sugar-cured hams, leather, corduroy, boxes, drugs, furniture, pianos, organs, hardware, wagons, porcelain bathtubs, and men's clothing. Louisville is perhaps the most important meat packing center in the south. Because of its excellent transportation facilities, the city is a very important commercial center. Huge quantities of farm produce, lumber, iron ore and coal are shipped annually. The city has increased greatly in prosperity and commercial importance in recent years, having taken a foremost rank among the manufacturing cities of the west. There are more than 4,000 factories in Louisville.

The public school system of the city is excellent. The value of its school property exceeds $1,300,000; the amount annually expended on elementary education is $700,000. Among the principal institutions of higher learning are the University of Louisville, with 2,619 students and a faculty of 278 in 1933; Louisville College of Pharmacy, Jefferson School of Law, and the Southern Baptist Theological Seminary. Other leading institutions include the Kentucky Institute for the Education of the Blind, the State University for Colored People, the Presbyterian Theological Seminary, and a training school for nurses.

Louisville was settled in 1778, and named for Louis XVI of France. In 1828 the first city charter was procured. In 1930 the population was 307,745.

See Kentucky.

Lounsbury, Thomas Raynesford, an American author, was born in Ovid, New York, in 1838. He was graduated in 1859 from Yale University. Young Lounsbury was a Union officer during the Civil War. He spent the three years following the close of the War in teaching and study near New York City, and in 1869 was appointed English instructor in the Yale Sheffield Scientific School. In 1871 he became professor of English at Yale University, where he remained until his retirement in 1906. He was also librarian, and a member of the Academy of Arts and Letters. He died in 1915. Among his works are *History of the English Language* (1879-94); *Life of James Fenimore Cooper* (1882); *Studies in Chaucer* (1891); *Shakespeare and Voltaire* (1902); *The Standard of Usage in English* (1908), and *English Spelling and Spelling Reform* (1909).

Lourdes (*lo͞ord*), a famous site in France of pilgrimage. The town of Lourdes is situated in the department of Hautes-Pyrénées, on the Gare de Pau, twenty-two miles southeast of Pau, and twelve miles southwest of Tarbes. In a niche above one of the caves in the Massabielle rocks outside the town, a girl of fourteen years of age, Bernadotte Soubirous, claimed that in 1858 the Virgin Mary appeared to her. A spring rises from the spot, which is credited with miraculous powers. In 1889 a church was built to accommodate the pilgrims, about 500,000 of whom annually visit Lourdes. The walls of the interior are lined with crutches, canes and various supports discarded by persons who claimed healing at this famous shrine. In 1934, Bernadotte Soubirous was canonized.

Lourenço Marques (*lō-rĕn'sō mȧr-kĕs'*), the capital and a chief seaport of Mozambique in Portuguese East Africa, is situated on Delagoa

Bay. It is connected by rail with the Transvaal and is a chief export point for the products of the district of the same name, which include sisal, sugar, maize, cotton, copra and mining products. Lourenço Marques was a center of intrigue during the Boer War. The population in 1931 numbered 42,779.

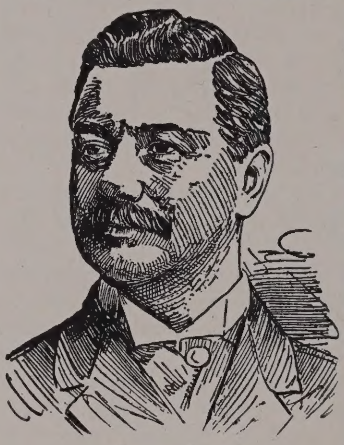
Louvain (*lo͞ovăn′*), a city of Belgium, is situated on the Dyle River, eighteen miles east of Brussels. It was a rich and extensive city of 200,000 citizens in the fourteenth century, as the capital of Brabant and the seat of the manufacture of fine cloth. Heavy punishment for a revolt drove large numbers of its citizens to England in 1382. The great university, with a library of 250,000 volumes, botanic garden and museums, founded in 1426, in 1931-32 had 4,071 students. Louvain was devastated in the World War of 1914 and most of its beautiful buildings and art treasures destroyed. The industries are bell-founding, brewing and the manufacture of leather, paper, and lace.

Louvre (*lo͞ovr*), the greatest of the modern palaces of Paris, lies in the center of the city near the Seine. It is a square of 576 by 538 feet. The first part, the southwest wing, was built in 1541, and the principal part of the great square was completed under Louis XIV. In 1857 the new Louvre, as it was called, was finished in the form of two buildings thrown out at right angles to the galleries which connected the old Louvre with the palace of the Tuileries. The Louvre and Tuileries now form a single palace, covering nearly 60 acres. The eastern front of the Louvre had a row of 28 Corinthian columns, and was considered one of the most beautiful architectural works of any country. The buildings forming the Louvre are used largely as galleries of art; the library was begun under Charles V, who placed the royal collection of books here; and the royal pictures were brought here in 1681. All of the works of art in the palaces were transferred to the Louvre during the Revolution, and thrown open to public inspection. Napoleon's conquests in Italy added great treasures to the collections. Under his architects the museums of ancient art, the Egyptian museum and the council-chamber, afterward used for an art-school and marine museum, were built. Many of the art-treasures brought from Italy were restored.

Lovejoy, Elijah Parish, an American editor and noted abolitionist, was born at Albion, Maine, in 1802. He was graduated from Waterville College and Princeton Theological Seminary, and ordained in 1833. He did not preach, however, but became editor of the *St. Louis Observor*, a strong Presbyterian paper. A negro lynching roused him to write editorials which were determinedly abolitionist. He was threatened with violence, and moved his offices to Alton, Illinois. There in 1837, a mob flung his press into the river. Citizens of Alton presented him with a new press which was again destroyed, as was a third one. Upon the arrival of a fourth press, it was placed in a warehouse under guard. In the ensuing flight on the night of November 7, 1837, Lovejoy was mortally wounded. His martyrdom hastened the inevitable conflict.

Lovett, Robert Morss, an American editor and educator, was born in Boston in 1870. He was graduated from Harvard University in 1892, where he became instructor in English in the following year. He was assistant professor from 1896 to 1904, associate professor from 1904 to 1909, and professor of English in 1909, in the Junior Colleges, University of Chicago, and dean of these colleges from 1909 to 1920. In 1919 he became editor of *The Dial.* Among his published works are: *A History of English Literature* (1902); *Richard Gresham* (1904); *A First View of English Literature* (1905); *A Winged Victory* (1907), and *Cowards*, a play (1917). W. V. Moody was his collaborator in preparing the *English Literature.*

Low, Seth, LL.D., an American educator, was born at Brooklyn, New York, on January 18, 1850. After graduating at Columbia in 1870 he began the study of law, but left it to enter his father's tea-importing house and become a member of the firm. In 1881 he was elected mayor of Brooklyn on an independent ticket, and administered its affairs for four years. In 1890 he became president of Columbia College and reorganized the institution on a university basis. He, moreover, presented it with its finely equipped library-building at a cost of a million dollars. Dr. Low took a lively interest in pure government for New York, being a member of its rapid-transit and Greater-New-York commissions. In 1899 he was appointed one of the American delegation to the peace-conference at The Hague. He also was president of the Archæological Institution of America and vice-president of the New York Academy of Sciences. In 1901 he resigned the presidency of Columbia University, and was elected mayor of New York, defeating the Tammany candidate. While mayor of New York City (1901-03), he did much to purge the civic administration. He died on September 17, 1916.



SETH LOW

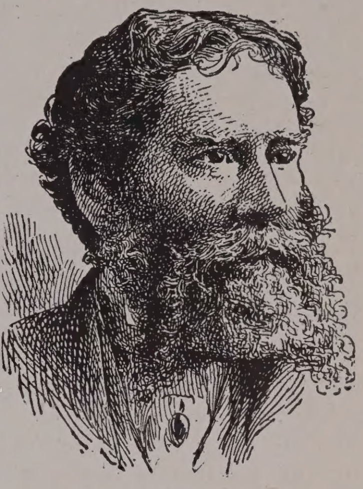
Low, Will Hicok, an American artist, was born at Albany, New York, on May 31, 1853. At an early age he became interested in painting and decorative designing as a profession. He has done much in decorating panels, ceilings and the like with ideal groups and paintings, and has also turned out much fine stained-glass work. As a beginner in figure-painting, he studied under Gérome and Carolus Duran at Paris. He is an academician of the National Academy of Design, one of the founders of the Society of American Artists and the holder of many medals, diplomas and awards for his drawings and decorative work.

Low'ell (*lō'el*), a manufacturing city in Middlesex County, Mass., is on Merrimac River, 25 miles northwest of Boston. The river has a fall of 33 feet, which gives it fine water-power, and it is one of the largest manufacturing cities of the country. There are boot and shoe factories, nearly one hundred cotton and woolen mills and the largest carpet manufactory in the country, turning out 4,000,000 yards of carpeting a year. Other manufactures are leather, paper, iron goods, patent medicines, chemicals and carriages. Lowell manufacturers have been noted for their care of their work-people. In early days the operatives were gathered from the country around, and largely were the sons and daughters of New England farmers. They lived in boarding-houses carefully managed, attending evening schools and lectures, publishing local journals, and having the use of free reading rooms and libraries. The large foreign emigration now supplies a permanent manufacturing population; but the system of good homes and advantages for study and recreation is followed by many of the large corporations. The city pays much attention to education; the value of its school-property exceeds $5,000,000, and on elementary education it expends annually over $700,000. It maintains a public library with over 100,000 volumes. Lowell was made a city in 1826. Population 138,000 a gain of 12 per cent. over the previous decade.

Lowell (*lō'el*) **Abbott Lawrence,** lawyer, educator, president of Harvard University since the resignation of Charles W. Eliot in 1909, was born at Boston in 1856, and was graduated from Harvard in 1877. He practised law in Boston, and in 1900 was made a Harvard professor following the publication of his *Governments and Parties of Continental Europe.* James Russell Lowell was an uncle.

Lowell, Amy (1874–1925), sister of the president of Harvard University, and niece of James Russell Lowell, was one of the leaders of the new poetic movement which has been progressing rapidly in the United States since 1910. She was born at Brookline, Massachusetts, and educated at Tufts College and Columbia University. Her first poem appeared in *The Atlantic Monthly* in 1910. A volume, *A Dome of Many Colored Glass*, containing many excellent sonnets, appeared in 1912. She then fell under the influence of Paul Fort and other French symbolists, and developed what has been called polyphonic prose or "free verse." It is, in a way, poetry, for it possesses a rhythm and "many sounds and voices," which is the meaning of "polyphonic." *Sword Blades and Poppy Seed* represents this kind of verse. Her later books include *Pictures of the Floating World* and *Legends*, as well as translations from the Chinese. Shortly before her death she issued a most scholarly biography of the life of John Keats, English poet. The style is colorful, forceful, vital, musical.

Lowell, James Russell. "If writing poetry were a profession I should be a poet," Lowell declared when, at 19, he graduated from Harvard. So, with the best of intentions to be what was expected of a man of New England birth and education, he studied law and was admitted to the bar. Nevertheless, he spoiled his chances of success in so serious a profession by continuing to write poetry. The youngest of the Cambridge poets, Lowell was born at Cambridge, Mass., Feb. 22, 1819. His home was Elmwood, a colonial mansion of prerevolutionary days, from which one could see Craigie House where Longfellow later made his home. Between the two there was the most beautiful friendship, that continued without interruption for nearly a half century. Until the age of 35 Lowell's "need for writing poetry" condemned him to a poor and uncertain living. His wife and three children died during these years of struggle, leaving him only one daughter to share his better fortune. But he had published two volumes of poetry and the first series of *The Biglow Papers*, and had written incessantly, for 16 years, thus gaining skill in expression. A reserved, scholarly man, whose diction was distinguished by purity and elegance, it is curious that Lowell should have first won wide recognition through *The Biglow Papers*—dialect verses called forth by strong feeling against slavery and the Mexican War. Behind their shrewdness, humor and homely common sense stood keen satire, wit and culture. In 1855 Lowell was elected professor of the Spanish and French languages at Harvard and also of *belles lettres.* For nearly twenty years he was engaged in editorial work on *The Atlantic Monthly* and the *North American Review*, successively, and in lecturing at Harvard. During that time he produced a second series of *Biglow Papers, My Study Windows, Fireside Travel* and *Among My Books;* and he became known as critic and essayist. Many people admire Lowell's prose


JAMES RUSSELL LOWELL

more than his poetry. His Harvard lectures, collected and published after his death, contain some of the most exquisite prose produced by any American writer. Every student should read his lecture on *The Province of the Poet*, if he would increase his understanding of verse and his pleasure in it.

Some of Lowell's simpler poems, like *The First Snowfall*, remind one of Whittier; *Midnight* of Longfellow; but *The Vision of Sir Launfal*, for which he would have won an enduring place had he written nothing else, is Lowell's own. It is "delicate, airy, fanciful; something new and true, in thought, feeling and expression; profound human experience; the creation of a thing at once beautiful and pathetic and heroic," fitting his own definition of what poetry should be.

His productive period in literature practically ended, Lowell gave the distinction of a man of letters and leisure to the position of American minister to Madrid and to London, where his polished manners and learning raised the European estimate of American character. The closing years of his life were chiefly spent in his birthplace among his books and friends. He died on Aug. 12, 1891, crowned with the triple wreath of a poet, an essayist and a man of distinguished public service. All these honors came to him through persistently following the bent of his genius. Before he was 21 Lowell declared: "God has given me powers such as are not given to all, and I will not hide my talent in mean clay. I will not care over much for bread, so I feed my soul."

Loyola (*loi-ō'lȧ*, Sp. *lȯ-yō'lä*), **Ignatius de**, was born in 1491 in Spain. At 14, he became a page to King Ferdinand, but, not liking court-life, entered the army. In the defense of Pampeluna he was wounded and taken prisoner by the French. When released, after long confinement, he set out to fit himself for a pilgrimage to Jerusalem, going as a beggar to the monastery of Montserrat, where he hung up his arms. Starting barefooted on his journey to Jerusalem, he entered the service of the sick and poor in the hospital of Montserrat. Thence he went to Rome to receive the papal benediction. In Jerusalem he wished to devote himself to teaching the gospel, but not finding encouragement returned to Barcelona. He now resolved to prepare himself by study for the work of religious teaching, and at 33 returned to study the very rudiments of grammar. While engaged in study, he first (1534) formed the pious fraternity which resulted in that great missionary organization, the Jesuits. He died at Rome, July 31, 1556. See *Life* by Denis.

Lübeck (*lü'bĕk*), a state of and free city in Germany, formerly head of the Hanseatic League and now an important shipping town, stands on the Trave, 12 miles from the Baltic and 40 northeast of Hamburg. The state possesses 115 square miles of territory, including the port near the mouth of the Trave, with a population of 105,857. The city is the great center for trade between Hamburg and the cities of Germany and the countries that border the Baltic. Among the churches is the Gothic St. Mary's, first erected 1163–70, which has two towers, 407 feet in height, masterpieces of old German sculpture. The cathedral, St. Peter's and St. James' are other ancient churches. A town-hall, hospital, library, school of navigation, zoological, antiquarian and art collections are other notable features. Population 98,620.

Luca della Robbia. See Robbia.

Luc'ca (*lo͝ok'kȧ*), a city of Italy, is 14 miles from Pisa. The cathedral of St. Martin, begun in 1063, has a cedar crucifix said to have been brought to Lucca in 782 and mentioned by Dante. The church contains some fine paintings. This city being one of the oldest in Italy has 40 other churches, some dating from the 7th and 8th centuries. The city buildings contain a valuable collection of paintings, and there are many institutions of science and art. The great trade is olive-oil and silk. The baths, famous since the 15th century, are in a beautiful valley 16 miles north. Lucca was a Roman colony in 177 B. C. It was created a duchy by the Lombards, and from 1369 to 1797 was an independent republic. Napoleon made it a principality; in 1815 it passed to Spain, but was ceded to Tuscany in 1847. Population 76,037.

Lucerne (*lo͞o-sẽrn'*), a city in Switzerland, is beautifully situated where the Reuss issues from Lake Lucerne. Outside one of the gates is the Lion of Lucerne, hewn (1821) out of the solid rock, after a model by Thorwaldsen, a monument to the Swiss guard who perished at the Tuileries in 1792. Nearby is Glacier Garden, with rocks illustrating the action of ice. The town is a busy center for summer visitors and tourists. Lucerne (Luzern) also is a canton; area 579 square miles, population 166,782. Population of city 39,152.

Lucerne, Lake of, the name usually given by foreigners to the principal lake of Central Switzerland. It is also called Lake of the Four Forest Cantons — Uri, Unterwalden, Schwyz and Lucerne and is one of the most beautiful sheets of water in Europe. It resembles a cross with a crumpled stem. Its shores are steep and rocky. It is 23 miles long, with an average width of 1½ miles, and covers 44 square miles. It forms part of the St. Gothard route, and is navigated by steamboats, but is liable to sudden and violent storms. It is rich in associations of William Tell.

Lu'cian, a Greek writer, was born in Syria in 120 A. D., and died in Egypt in 190 A. D. Having learned Greek, he practiced law in Antioch for several years. Then he gave his attention to the composition of speeches for declamation. Of his numerous works his *Dialogues of the Dead* are the best known. They, in general, are directed against the philosophers, gods and absurdities of paganism, and earned him the surname of The Blasphemer.

Lu'cifer (Latin, "*light-bringer*"), the name given to Venus as the morning-star. The early fathers of the church attached this name to Satan, in the belief that *Isaiah xiv. 12*, which refers to the king of Babylon, contained a reference to the prince of darkness. In Milton's *Paradise Lost*, also, Lucifer is the original name of the archangel (now called Satan), who fell and dragged down to hell the third part of the host of heaven.

Lucknow (*lŭk'nou'*), capital of the province of Oudh and fifth city in British India, stands on Gumti River, 42 miles from Cawnpore and 199 from Benares. The city is interesting, not only as the capital of the ancient kingdom but for the desperate fighting in and around it during the Sepoy mutiny of 1857. Early in the summer the English garrison, less than 2,000 strong, was besieged by a force five times as large. After a 12 weeks' defense, during which their commander Sir Henry Lawrence was killed, Generals Havelock and Outram fought their way into the city with a relieving force, and General Outram assumed command of the defense. The rebels, however, continued to prosecute the siege, and in November the city was evacuated by the British. In March, 1858, the English under Sir Colin Campbell (afterward Lord Clyde) returned, and after a week's hard fighting compelled the rebels to surrender. Their overthrow ended the mutiny. Population 264,049.

Lucretius (*lū-krē'shĭ-ŭs*), Roman poet and philosopher of the 1st century B. C. Very little is known of his history, and his only work is a philosophy in poetry on *Nature* (*De Rerum Natura*). Lucretius was an earnest opponent of all religious faith and of all belief in supernatural power. The highest good to him is a calm and tranquil mind. The creation of the world out of nothing he held to be impossible, neither can anything be destroyed. Life, mind, soul are merely, as we should say, functions of the body and will perish with the body. All knowledge is derived from the senses, which are our only test of truth. There is a decidedly modern flavor about some of the doctrines of Lucretius. For instance: He explains contagious diseases by the flying about in the air of minute particles, germs as we call them, injurious to life; and again, in his account of the various types of animal life, as they have successively appeared on the earth, we almost have an anticipation of the Darwinian theory of evolution. He died by suicide in 55 B. C.

Lucullus (*lū-kŭl'lŭs*), a distinguished Roman general, was born about 110 B. C. In 74 B. C. he defeated Mithradates, king of Pontus, and almost annihilated his army on its retreat. Three years later Pontus became subject to the Romans. In 69 B. C. he marched into Armenia, and gained a complete victory over Tigranes, king of that country. In the following year he gained another great victory over Tigranes and Mithradates, but soon after was superseded by Pompey. As a member of the Roman aristocracy he attempted to check the power of the first triumvirate,—Pompey, Crassus and Caesar; but, failing in his efforts, he soon retired altogether from public life, his great wealth enabling him to spend the remainder of his days in ease and luxury. He died about 57, B. C.

Luini (*lōō-ē'nē*) or **Lovino, Bernardino,** a painter of the Lombard school, was born in 1490 at Luino. His skill was developed in the school of Leonardo da Vinci; indeed, many of his works were at one time attributed to that great artist. Luini's principal charm is poetic grace and beauty; he is one of the great painters whose "supremacy" Ruskin affirmed. He died about 1535.

Luke, the reputed author of the third Gospel and of *Acts*. He was a friend and companion of Paul, being spoken of (*Colossians iv: 14*) as the beloved physician. In the third gospel Luke makes no pretension to apostolic sanction or authority, but simply proposes to compile and arrange the various facts and incidents he has gathered from others. Among other material used by him were the discourses of Christ recorded by Matthew and some parts of *Mark;* but he must have had other sources for the details he has given concerning the birth of Jesus and for the canticles, which he alone has preserved.

Lum'bering, an industry of great importance in the United States, Canada, Russia, Scandinavia, Germany and France, is the process of cutting and sawing timber for purposes of building and furnishing. In the United States there was more than $500,000,000 invested in lumber and timber-products in 1912. Those employed numbered over 400,000. The value of the products was upwards of $550,000,000. It is not only the direct production of lumber that counts; but large profits are made from by-products. Sawdust is sometimes compressed and heated until it may be molded into a solid mass of any required shape. In Norway it is distilled to afford acetic acid, tar and wood-naphtha. The best wood-alcohol is obtained from pine sawdust. Woodpulp is in ever increasing demand for the manufacture of paper. The lumber industry, properly so called, is divided into three branches, each of which represents a group of distinct operations. *Logging* is felling and roughly trimming timber and transporting it, preferably by water but, if necessary, by rail, to its destination. The great rivers of the United States afford unequalled opportunities for logging. Whenever possible, the logs are fastened in huge rafts and navigated down stream as the current and volume of the river may permit. Then comes the *sawmill* branch of lumbering. The logs are sawn into beams and planks, but not carefully trimmed. The *planingmill* stage is that in which the beams and boards are trimmed and manufactured to standard dimensions and uses. In lumbering the principal difficulty always is transportation. At times in the winter the roads are flooded and frozen for the readier transportation of logs. In connection with lumbering arises the national problem of how to conserve the forests. Great as are the forests of America, they cannot supply the present enormous demand. Many forests have been totally cleared. In 1912, according to the bureau of the census and the forest-service, over 40,000,000,000 feet were cut. The actual cut is believed to have been five per cent. larger or 2,000,000.000 feet more. Efforts are made by the United States Bureau of Forestry to conserve great forest-parks and to plant young trees. Treeplanting by school children and by individual citizens is and ought to be encouraged. See Forests.

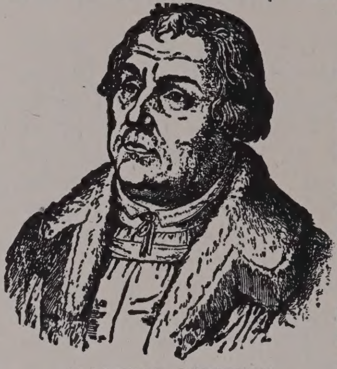
Lun′dy's Lane, a battle fought in Canada near Niagara Falls, during the War of 1812, between the British and Americans July 25, 1814. Early in the day General Brown, the American commander, learned that a British force under General Drummond had crossed the Niagara at Queenston to attack Fort Schlosser. To divert the British from this purpose General Winfield Scott with 1,500 men was ordered to make a demonstration upon Queenston. About sunset Scott came upon a force under General Riall posted on an eminence near Lundy's Lane. A severe fight ensued, which continued until midnight. The British were driven from their strong position, and General Riall and his staff were taken prisoners. By a fierce countercharge, however, the British recaptured the position and the guns which had been taken. The Americans withdrew toward Chippewa. General Brown arrived upon the field and took command in person sometime after sunset. Both he and General Scott were severely wounded during the engagement. The British loss was 878; that of the Americans 743.

Lung′fishes. See Mudfishes.

Lungs. See Respiration, Organ of.

Luray′ Cave, a cavern near Luray, Va., remarkable not so much for size as for the great number and extraordinary shape of its stalactites. Some of these columns exceed 50 feet in length. Many are hollow, giving out bell-like notes when struck; and the colors range from waxy-white to yellow, brown or rosy-red. The cavern is lit with electric light, and attracts thousands of visitors every year.

Lute, a musical instrument not now used, introduced into Europe by the Arabians, from whose language it derives its name. The Arabian lute was made from 21 pieces of maplewood, and the strings, eight in number, were tuned in pairs. In order to accommodate the lute to the chromatic scale, the number of strings was gradually increased to 24. The lute is represented on the sculptures of the Egyptian tombs. So its antiquity is great.

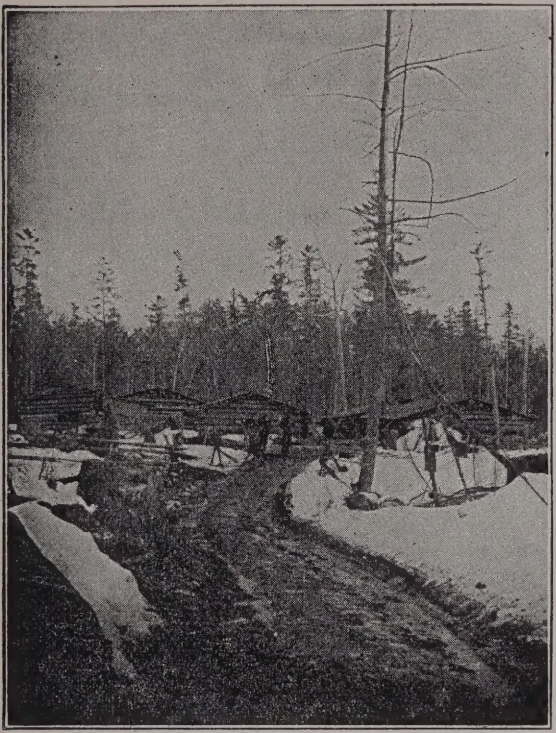


MARTIN LUTHER

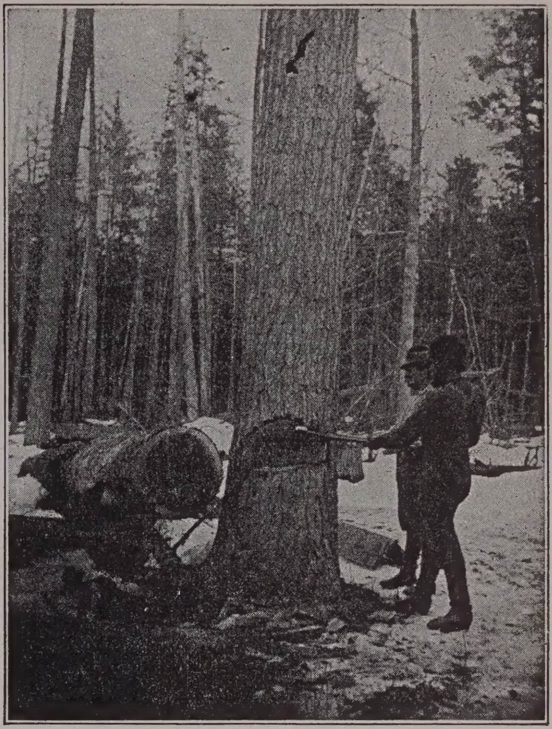
Lu′ther, Martin, chief of the great Protestant Reformation, was born at Eisleben, Germany, Nov. 10, 1483. His early education was obtained at Madgeburg and Eisenach, and at the latter place, by the sweetness of his singing, he attracted the notice of Frau Cotta, who provided him with a comfortable home during his stay. In 1501 he entered the University of Erfurt to qualify himself for the law, but while here he became the subject of profound religious impressions and withdrew (1505) into the Augustinian convent, where he spent three years, giving his time and attention to religious themes and his religious experience. In 1509 he became a bachelor of theology and began to preach and lecture. Being sent on a mission to Rome in 1510, while climbing on his knees the *Scala Santa*, the words "the just shall live by faith" flashed upon his soul and raised him to his feet. Luther's career as a reformer may be said to have commenced from that date, and soon after his return he began to denounce the prevailing system of indulgences and became involved (1517) in his famous controversy with Tetzel. Cardinal Cajetan was sent as the pope's legate to Luther, but could not induce him to retract his utterances. In 1521 Luther was summoned before the diet at Worms. His friends sought to persuade him not to obey, but he declared he would enter Worms if there were as many devils in it as there are tiles on the roofs. Before the diet he stood unmovable by the appeals and threats. On his return, being placed under the ban of the empire, he was seized at the instance of his friend, the elector of Saxony, and safely placed in the old castle of the Wartburg. In 1525 Luther married Katharina von Bora, an event which not only strengthened the Reformation, but contributed largely to his own happiness and

THE LUMBERING INDUSTRY

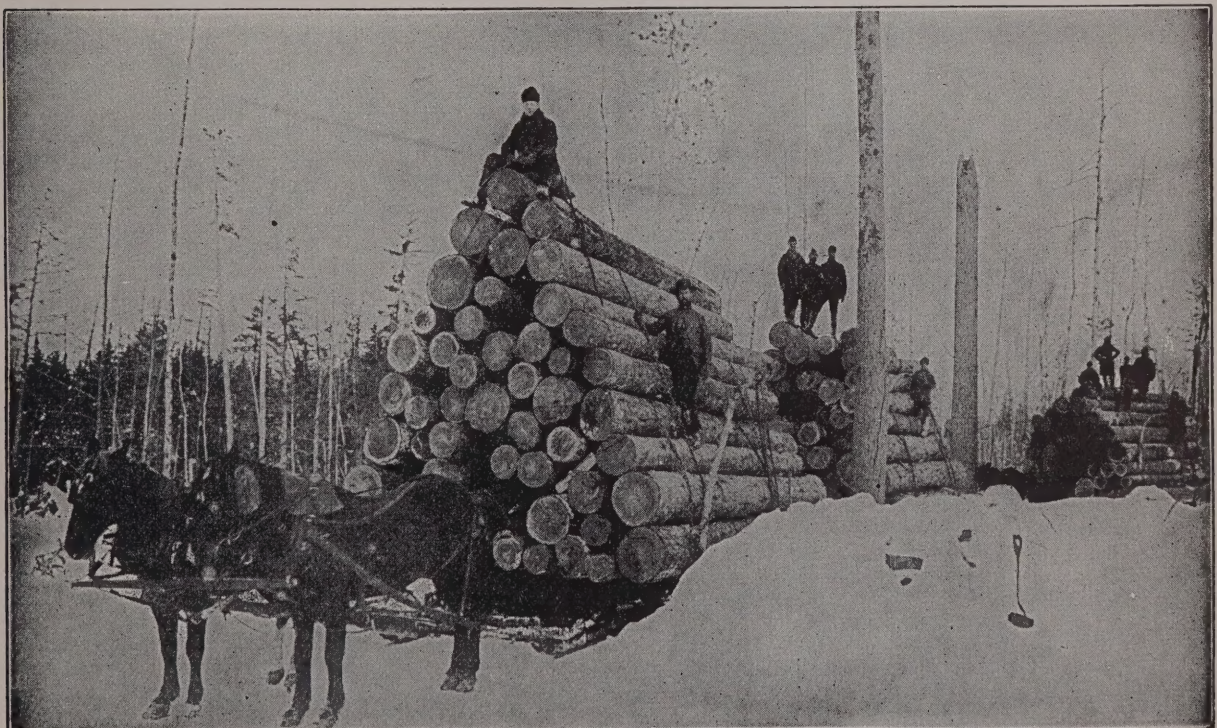
The first stage in the lumbering industry is known as logging. Formerly the trees were felled in the forest in the winter, hauled on snow sleds to the streams, where they were piled on the banks, and in the spring, when the streams were free from ice, they were floated down to the mills. Most of the northern forests were cut and transformed into lumber by this method.



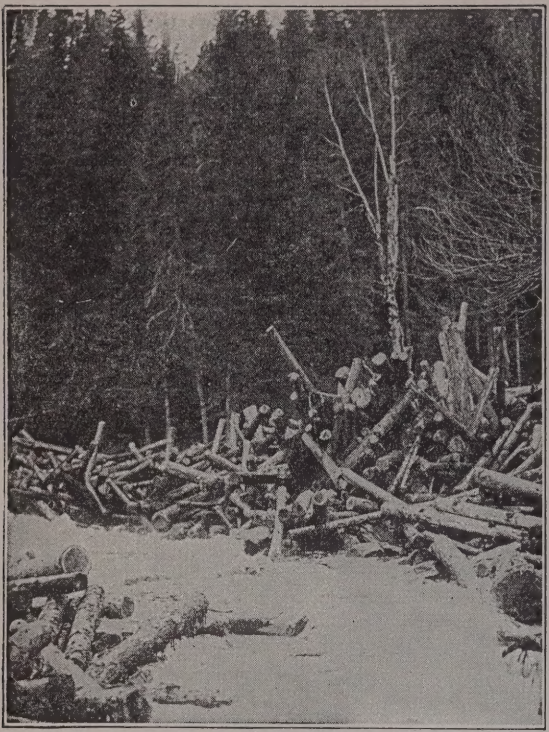
Here is a typical lumber camp. These log houses or huts, the cracks plastered with clay, form snug, warm quarters for the army of loggers who live in them through the winter.



Here we see men felling the trees. You will note that one of these men is right-handed and the other left-handed, so that they stand side by side and chop on opposite sides of the same tree. Sometimes the trees are cut down by a crosscut saw instead of an ax.

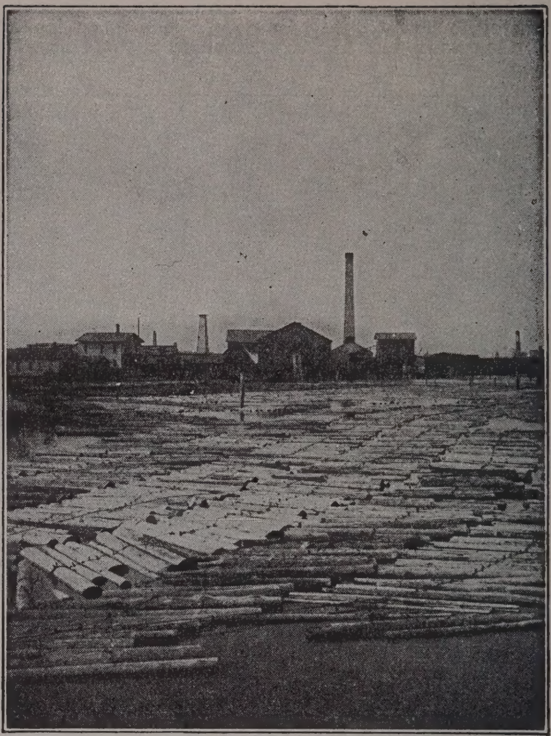


After the trees are felled they are cut into logs of proper length with a crosscut saw, then they are gathered together and loaded onto strong, wide sleds and are hauled to the streams. Here we see a number of teams hauling immense loads of logs over the deep snow. It requires both hard labor and skill to build these great loads symmetrically so that they can be hauled safely.

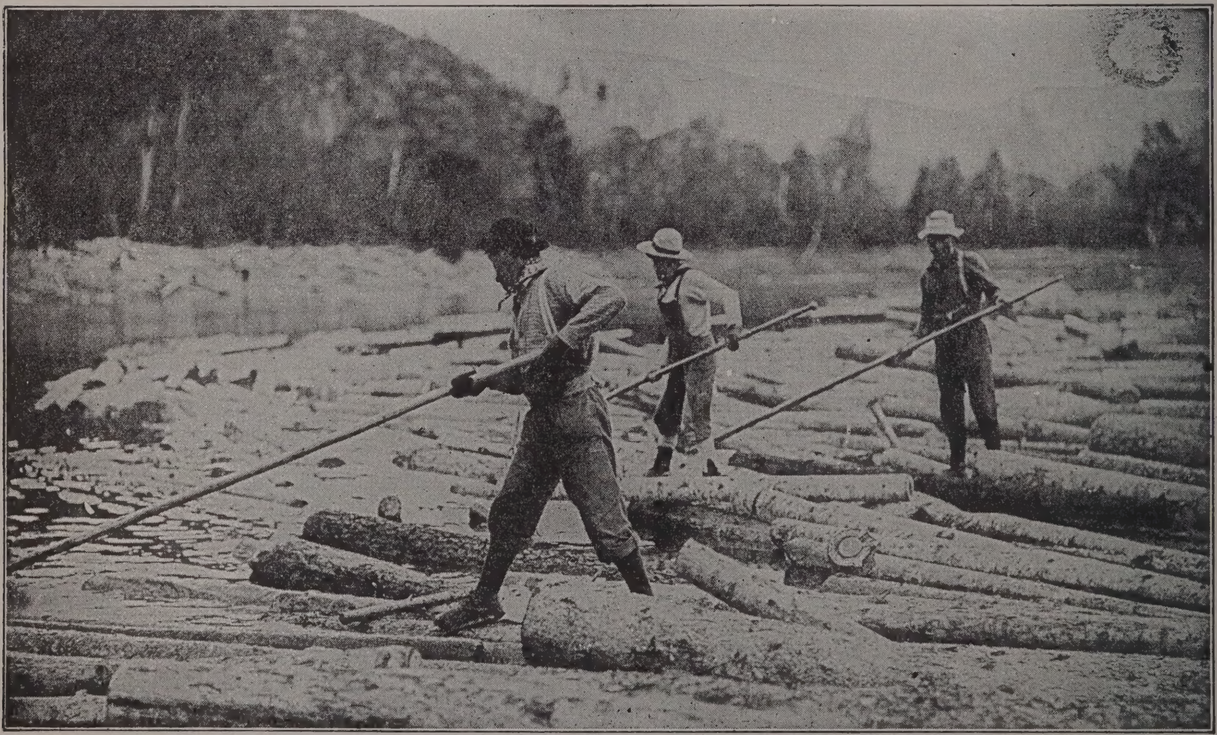


Courtesy Doubleday Page & Co.

In the spring when the streams are at flood an army of loggers, often called Lumber Jacks, roll the logs from the bank into the stream, to be carried down by the current. Often the logs carried swiftly down the stream meet some obstruction, a jam is formed, and the logs are piled up into a tangled mass, as we see in this picture.

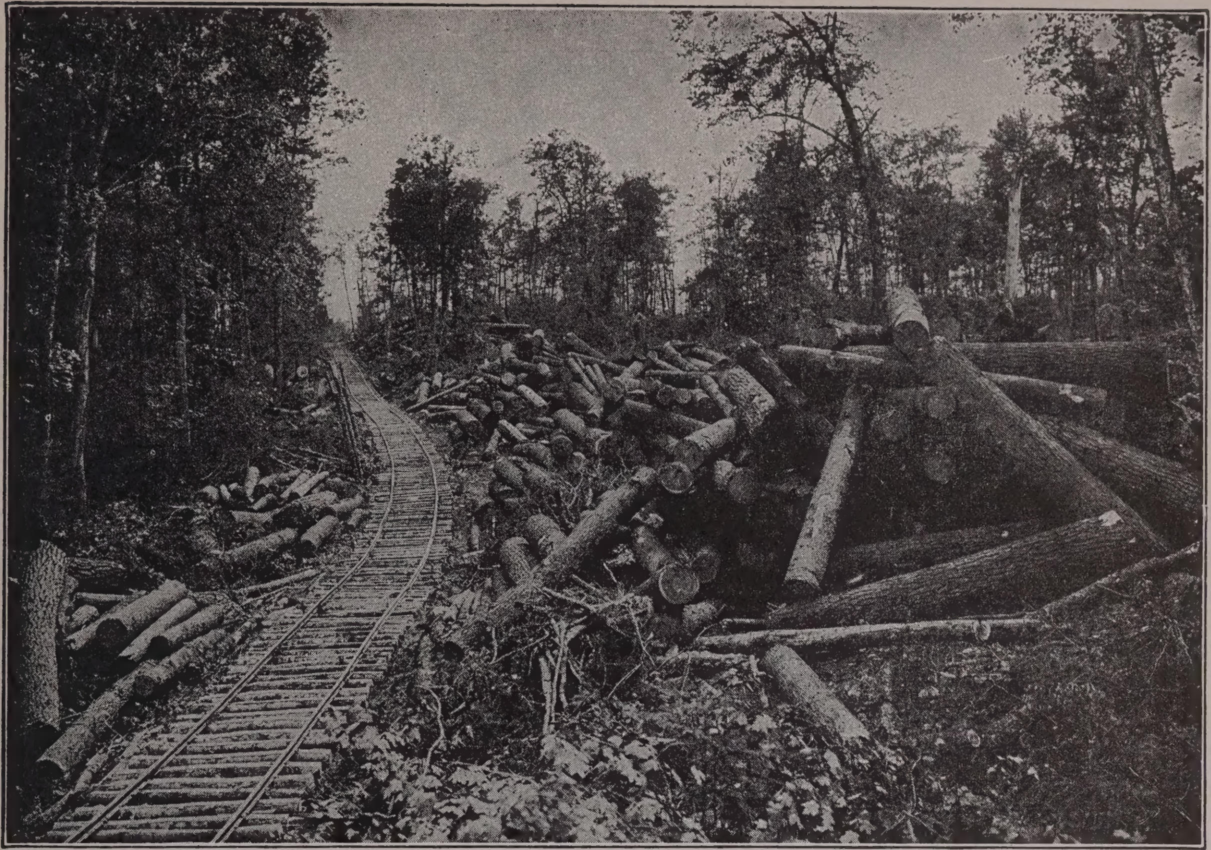


When the logs reach the lower and larger streams, they are gathered and fastened into long rafts and finally moored in the mill pond. Here they are held in place by what is called a boom, which consists of a long string of logs held together end to end by strong chains.



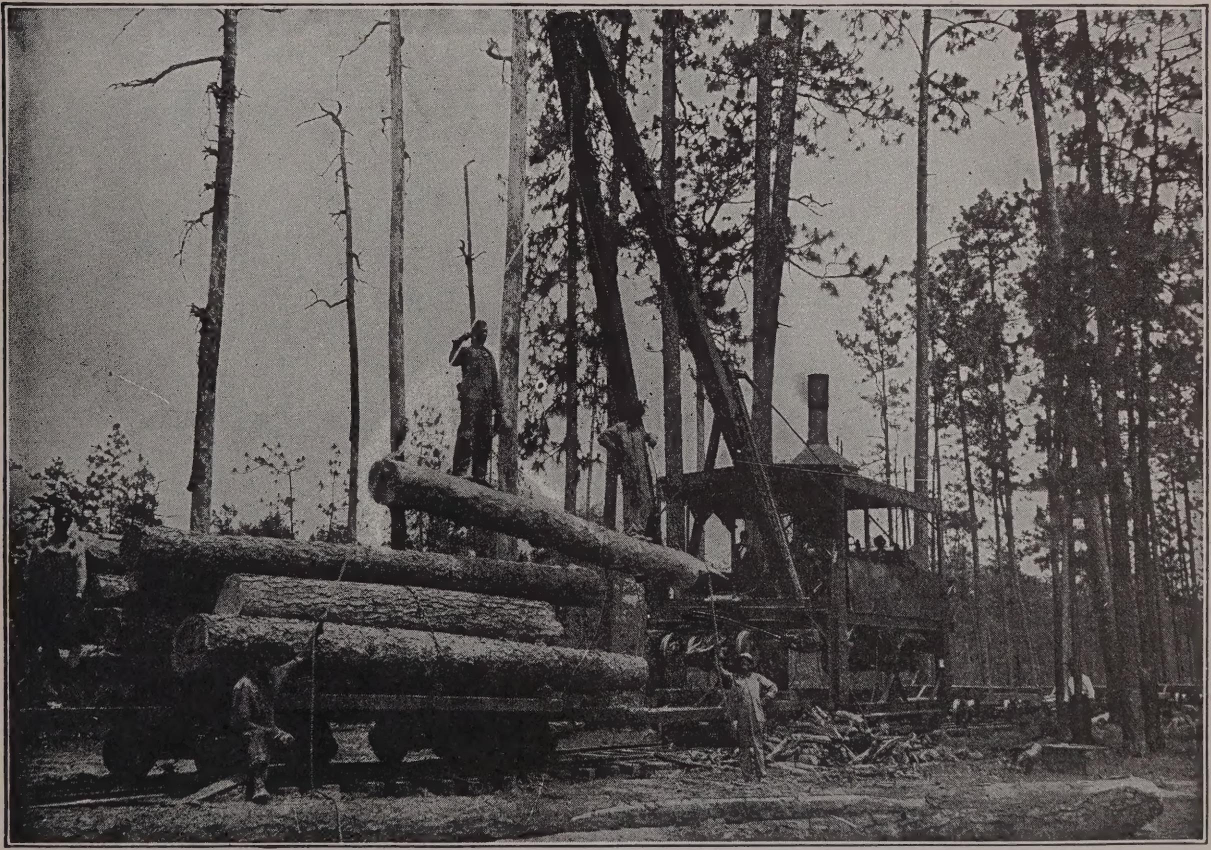
Courtesy Doubleday Page & Co.

Now comes to the Lumber Jack the test of courage, strength and skill. With shoes heavily spiked they step out on the jam of logs and, at the risk of life and limb, with long spike poles and cant hooks called peaveys, they dig and tug away at the logs that are on the lower side of the jam, loosening them and setting them afloat. The single log on which they stand often twirls under their feet and only their skill and the spikes in their shoes save them from destruction.



Courtesy of Clyde Iron Works

The engine moves the skidder with frequent stops along the track and thus all the logs on each side of the spurs are hauled up to the side of the railroad, as we see in this picture.

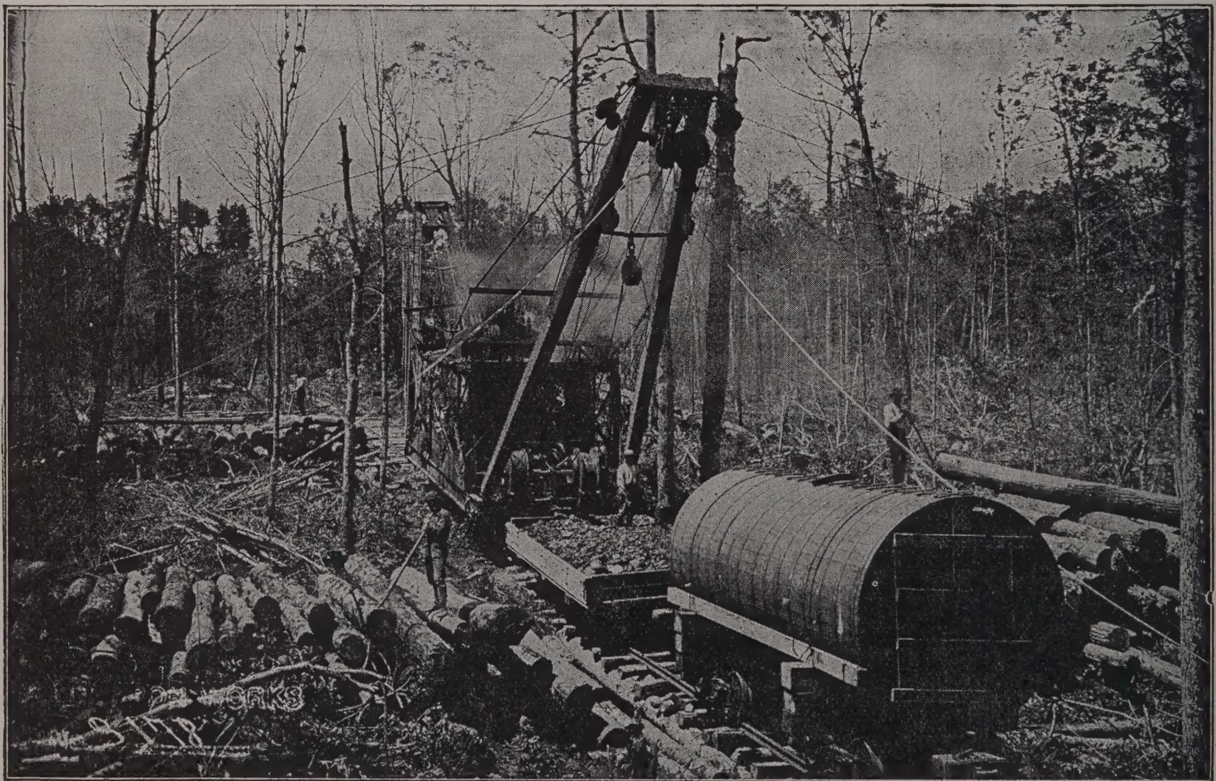


Courtesy of Clyde Iron Works

Here we have a picture of a McGiffert log loader which loads the logs onto the cars. It is so built that it may run along the same track on which are the cars to be loaded. It is so made that the trucks can be lifted up, the machine resting on legs, and thus a passage way under the machine is provided, so that the flat cars can run under the machine, as through a tunnel, until the forward car is brought under the boom Logs are lifted by the boom and placed on the car. When the car is loaded the train is pulled forward so that the next car is in position for loading. This process goes on until all the cars are loaded Then the machine is let down so that the wheels rest upon the track and the train is moved where desired.

Courtesy of Clyde Iron Works

In modern lumbering a railroad is run through the forest to be cut. From this main line are extended on either side branch roads, or spurs, at intervals from 1,000 to 2,000 feet. The road and the spurs are constructed in a cheap, temporary way. The trees on each side of the spur track, back to a distance of 500 to 1,000 feet, are sawed down and cut into logs, as shown in this picture.



Courtesy of Clyde Iron Works

The machine shown in this picture is called a skidder. It is run along the spur track and draws the logs which have been cut to the railroad. The skidder is a steam machine mounted on a steel frame like a flat car and has long steel booms at each end. A steam boiler is set in the middle of the machine and there is an engine at each end provided with drums on which wire cables are wound. The cables run from these drums to the end of the booms through blocks and are taken back into the woods by means of lighter cables, which are also wound on drums. The logs are attached to the skidding cables and drawn to the track by winding up the cables on the drums.

usefulness. He died at Eisleben, Saxony, on Feb. 18, 1546. Directly opposing estimates of Luther and his work are held by Roman Catholics and Protestants. To the latter he stands as a grand and epoch-making reformer. The former regard him as an heretical fanatic, who, instead of working patiently within the church for a reform which, they claim, was accomplished later through the Council of Trent, rashly led a revolt against the true church and needlessly and unwarrantably hindered the progress of Christianity See *Life* by Koestlin and by Bayne and *Essays* by Carlyle, Froude and Tulloch.

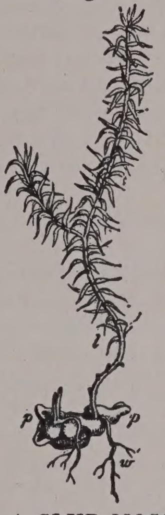
Luxembourg (*lüks'ŏn'bōōr'*), a palace in Paris, erected in 1615–20 for Maria dei Medici, queen-consort of Henry IV. Since the Revolution it has served the house of peers (the French senate), and for a time contained an interesting museum of art (now removed to an adjoining building) in the Petit-Luxembourg. Many of the apartments are splendidly decorated and enriched with paintings and sculptures

Luxembourg, (*lŭks' ĕm bûrg*) is an independent grand duchy of Europe, lying between France, Germany and Belgium. As a whole it is a plateau, about 1,000 feet above sea level on the north and northwest, sloping into the Moselle valley at the southeast. Nearly all of its rivers flow into the Moselle, which is part of its boundary. The northern part of the duchy is a section of the Ardennes-Eifel *massif;* only the valleys are fertile and there is a comparatively thin sprinkling of population. The southern part, called the Gutland because of its relative fertility, raises fair crops of wheat, barley, beets, peas and beans. The Moselle valley is warm and sheltered, and like its German continuation to the northeast, has extensive vineyards and orchards. The duchy has a small portion of the famous *minette* iron-field of Lorraine, but no other minerals of importance. The area is 998 square miles; population about 300,000. The chief city and capital is Luxembourg, (population 25,000), until 1867, when its fortifications were dismantled, the strongest fortress in Europe except Gibraltar.

After having formed a part of the empire of Charlemagne and his descendants for nearly five centuries, Luxembourg passed to the house of Hapsburg, which held it, with one or two short intervals, until 1795, when it was conquered by France. The Congress of Vienna made it a grand duchy, and assigned it to King William I of Holland. His descendants ruled it until 1890, on the death of William III. Under the Salic law the duchy could not pass to Wilhelmina, his daughter and only direct heir, and passed to a collateral heir, Albert, duke of Nassau, thus ending the union with Holland. From 1815 to 1866 Luxembourg was a member of the North German Confederation. From 1842 to 1919 it was a member of the German customs union, and during the **World War,** was held by German troops.

Luzon (*lōō-zŏn'*), the largest of the Philippines (which see).

Lyall, Edna, the English novelist known by this pen-name, was Ada Ellen Bayly, daughter of a London barrister and bencher of Gray's Inn. She was born at Brighton, Sussex, and at an early age took to writing as a profession. Her first story, *Won by Waiting*, was published in 1879, which was followed by *Donovan*, *We Two*, *In the Golden Days*, *Knight Errant*, *A Hardy Norseman* and others. Her later novels are *How the Children raised the Wind*, *Wayfaring Men* and *Hope the Hermit.* Her books attained wide popularity. She died on Feb. 8, 1903.

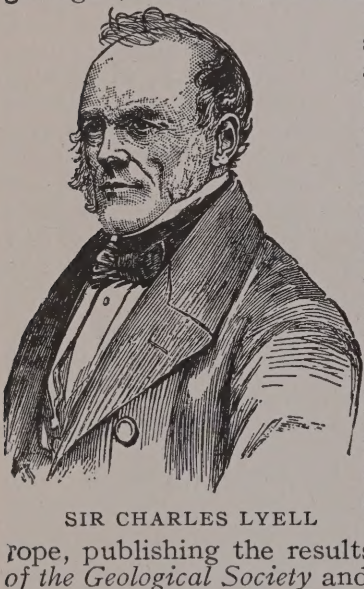


A CLUB-MOSS

Lycopo'diales, plants forming one of the three great divisions of *Pteridophytes*, commonly called club-mosses and sometimes ground-pines. The plants have slender, branching, prostrate or erect stems completely clothed with small leaves, having a general moss-like appearance. The erect branches are often terminated by conspicuous cylindrical strobili, usually in pairs, which are the "clubs" referred to in the name club-mosses. The group is a very ancient one, and in the coal-measures contained large tree-forms, which were conspicuous members of the forests. The terminal strobili are composed of overlapping sporophylls, each sporophyll bearing a sporangium on its upper surface near the base. The two conspicuous genera are *Lycopodium* and *Selaginella.* The former genus contains the coarser forms which are more characteristic of the temperate regions, being the ordinary club-mosses, and are homosporous, the spores produced by the sporangia being similar. Selaginella contains much more numerous species, is particularly developed in the tropics and includes the smaller and more delicate club-mosses They are common in greenhouses as delicate, mossy, decorative plants. The most interesting feature of the genus is that its species are all heterosporous. The two kinds of sporangia are found in the same strobilus, the megasporangia being associated with the lower sporophylls of the strobilus and usually containing four megaspores; while the microsporangia are associated with the upper sporophylls of the strobilus, and contain numerous microspores. In many respects Selaginella approaches very near the seed-plants. See PTERIDOPHYTES and HETEROSPORY.

Lycurgus (*lī-kûr'gŭs*), the lawgiver of Sparta, lived 800 or 900 B. C. He was uncle of the young King Charilaos, and governed the state wisely during his nephew's infancy. Then he traveled over Crete, Ionia and Egypt. Finding his country in complete anarchy and disorder when he returned, he made a new division of property and a complete change in the laws and constitution. Having done this, he prepared to set out on another journey. Having first bound the citizens by oath not to change any of his laws until he came back, he left the city, never to return. His memory was honored, as that of a god, with a temple and yearly sacrifices.

Lyd'ia, anciently a country of Asia Minor, bounded on the north by Mysia, on the east by Phrygia, on the south by Caria and on the west by Ionia. The Lydians, shut out from the Ægean Sea by the Ionian Greeks, developed great commercial activity inland. They were believed to have been the inventors of coined money and of dice and other games. King Gyges, who reigned about 700 B. C., founded a powerful Lydian empire, which attained its highest splendor under his descendant, Crœsus, who was captured by Cyrus the Persian in 546 B. C. Sardis became the western capital of the Persian empire until its overthrow. Lydia subsequently was subject to Athens, Macedonia and Rome.


SIR CHARLES LYELL

Ly'ell, Sir Charles, an eminent Scotch geologist, was born in Forfarshire, on Nov. 14, 1797. While pursuing his studies at Exeter College, Oxford, he attended the lectures of Buckland, and thus acquired a taste for the sciences to which his life was devoted. He graduated in 1819, and soon afterward entered the legal profession; but, being possessed of ample means, he made scientific tours over Europe, publishing the results in *Transactions of the Geological Society* and elsewhere. Lyell's great work, *The Principles of Geology*, may be ranked, next after Darwin's *Origin of Species*, among the books which have exercised the greatest influence on the scientific thought of our era. A further important work from his pen was one on *The Antiquity of Man*. Lyell was knighted in 1848, and created a baronet in 1864. He died at London, Feb. 22, 1875, and was buried in Westminster Abbey.

Lymph [*limf*] (Greek for water), the colorless and almost transparent fluid found in the lymphatic vessels of the body. The lymph is conveyed by larger and larger vessels to the venous system, on entering which it mingles with the blood. The lymph of the left side of the trunk, of both legs and of the left arm passes into the blood through the thoracic duct; while the lymph of the right side of the head, neck, trunk and right arm enters the circulation at the junction of the axillary and jugular veins. The lymph arises from the fluid part of the blood which exudes from the capillaries, bathes the cells and tissues of the body, and then, after supplying them with food and receiving their excretions, passes on once more to enter the circulation as indicated. The quantity of lymph discharged daily into the venous system of a man weighing 150 pounds is about six pounds, or four per cent. of his weight.

Lynch'burg, Va., an old and picturesque city of central Virginia, on James River and the Chesapeake and Ohio, Richmond and Danville and Norfolk and Western railroads. It is situated 110 miles west of Richmond, and commands a fine view of the Blue Ridge. It is the trade and distributing center for a wide region watered by the James. Here is Randolph-Macon College (Methodist), an institution for the education of women. The water-power from the river aids its tobacco, cotton and flour mills, with iron foundries and railway machine shops. Population 29,494.

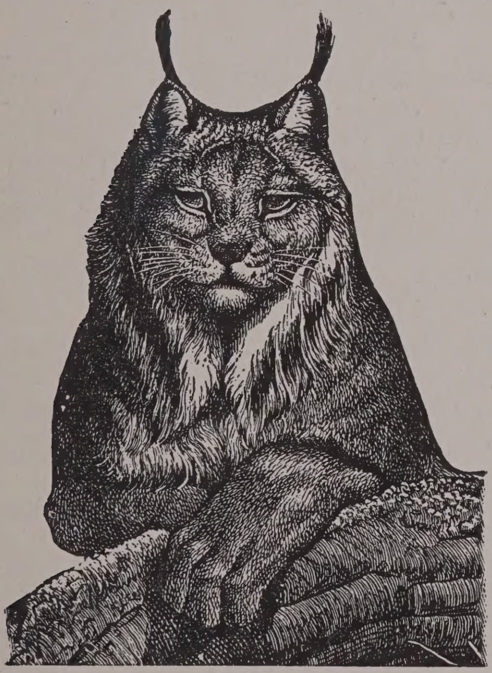
Lynch-Law is the execution of offenders without process of law and by persons other than officers of the law. The origin of the term is involved in doubt. One account refers the term to one Lynch, who was sent from England to America in 1687 to suppress piracy. But it can be traced to a much earlier date. In 1493, "James Lynch was mayor of Galway, and the council-books of that city are said to contain a minute that James Lynch, mayor of Galway, hanged his own son out of the window for defrauding and killing strangers, without martial or common law, to show a good example to posterity."

Lynd'hurst, John Singleton Copley, an English jurist, the son of Copley the painter, was born at Boston, Mass., May 21, 1772. When he was three, his father moved to London, and the son, after receiving a private education at Chiswick, in 1790 entered Trinity College, Cambridge. In 1804 he was admitted to the bar; and after several years of hard and patient labor his success was assured. In 1817 he obtained the acquittal of Thistlewood and Dr. Watson on their trial for high treason; for the next state prosecution, four months later, his services were secured by the government; and in 1818 he entered parliament as a Tory representative. Henceforward his promotion was rapid, and numerous high positions were given to him. In 1827 he was created Baron Lyndhurst, and in 1841 he became lord chancellor for the third time, holding the great seal till the defeat of the Peel government in 1846, after which he took but little part in politics. He died on Oct. 12, 1863. Lyndhurst's attainments as a lawyer and ability as a debater have never been questioned; but lack of earnestness prevented him from becoming great statesman or orator in the fullest sense of either term.

Lyne, Sir Wm. J., since 1899 premier of New South Wales and minister for home affairs in the new commonwealth, is a Tasmanian by birth. He entered the New South Wales legislature in 1880, and for a time was leader of the opposition, an ardent free-trader and, at first, opposed to Australian federation. He has loyally accepted it, since it has become an accomplished fact.

Lynn, a city and port of Massachusetts, on Massachusetts Bay, 10 miles from Boston, with which it is connected by railroad and street-cars. In the residential portion are many handsome villas belonging to Boston merchants. The principal industries are the manufacture of women's and children's shoes, electrical machinery and supplies. Its manufactured products rank second in valuation in New England. Population 110,000

Lynx, an animal of the cat family. The fur is of value. There are two common species in America, the Canada lynx and the red lynx. It is probable, however, that these are only geographical varieties of one species. They both have long fur and short tails, and are tree-climbers, preying upon small mammals and birds. The Canada lynx is the more northern kind; it extends across the continent to British Columbia and Alaska, and sometimes crosses the border into our northern states. A very similar form occurs in northern Asia and Europe. It is a terrifying animal, but is said in reality to be a coward. It is about three feet in length, has a lean body with long legs and large hairy paws, heavy fur of gray mottled with brown, long side-whiskers that stand far out from the face, stiff black hairs rising from the tip of each ear and very large eyes. It can climb and swim with ease. The red lynx or bay lynx is the particular form called the wild-cat, bob-cat or catamount. It once was common in all wooded regions of the United States, and is still to be found in rough forest-lands practically throughout the country; as in Maine, Virginia, Tennessee and "the bad lands" and mountains of Wyoming, Montana, Colorado and Texas. It is as large as the Canada lynx, but its fur is not so long, its paws being much smaller, its ear-tufts less conspicuous. It varies in color — often a yellow-brown tinged with red (ruddier in summer), coat spotted with brown or black, chin and throat white. While reputed fierce and wild, it is not aggressive; but it fights savagely when cornered or compelled to defend its cubs. As a rule it is shy and cautious, trying to keep out of sight. In hunting, it is its habit to lie in wait and spring from ambush rather than trail and pursue. To startle game into movement it will utter the scream for which it is noted and which is variously described by those who have heard it as like the shrill yell of an angry infant, or as a blood-curdling mixture of growls and caterwauls. It feeds upon squirrels, pheasants or hares, and destroys large numbers of birds and mice. It sleeps in cavern or hollow tree, and often rests at midday stretched along a limb in the sun. The northern lynx of the Old World is supposed to be only a variety of those of North America. It is reddish gray, more or less spotted. It has long fur, short tail and ears tipped with a few long hairs. In size it ranges from two and one half to three and one half feet, not counting the tail. The fur is of value. See Stone and Cram: *American Animals* and Hornaday's *American Natural History.*



LYNX

Ly'on, Mary, founder of Mount Holyoke Female Seminary, now Mt. Holyoke College, was born at Buckland, Mass., Feb. 28, 1797. By great effort and perseverance she succeeded in obtaining a good education, qualifying herself for the teacher's profession, and for several years taught in the public schools of the state. In 1837 she founded her famous seminary upon the plan of uniting domestic labor with intellectual culture. Her success in presiding over this caused many similar institutions to be established throughout the country, and the name of Mary Lyon has become a household word among all friends of the education and elevation of woman. She died at South Hadley, Mass., in March, 1849.

Lyon, Gen. Nathaniel, a brave American soldier, was born at Ashford, Conn., July 14, 1818. He graduated at West Point in

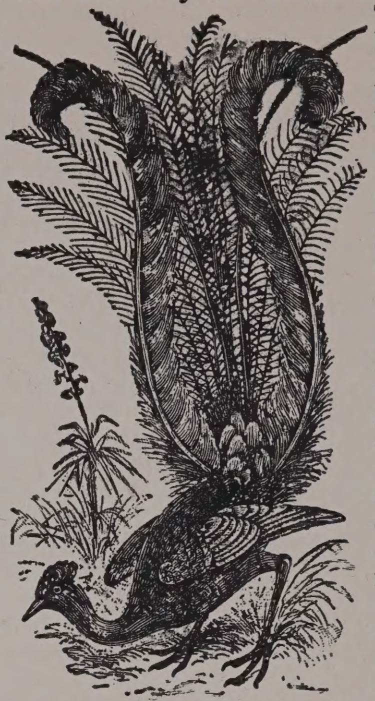
1841, and at the outbreak of the Civil War was in command of the arsenal at St. Louis, with the rank of captain. While here, he showed the mettle of which he was made by breaking up a camp of secessionists at St. Louis, established by Governor Jackson of Missouri. Some months after this he was placed in command of forces operating in southwestern Missouri against Price and McCulloch. Finding that he would be forced to retreat unless he could strike a blow, Lyon resolved to risk a battle at Wilson's Creek near Springfield (Aug. 10, 1861) The fight was a very severe one. While leading a regiment into action whose colonel had fallen, Lyon himself was instantly killed. His military career, though brief, revealed a character that the American people will never cease to honor and revere.

Lyons (*lī'onz*) or in French **Lyon** (*lē-ôn'*), the second city of France in industrial importance, though only the third in population, stands at the junction of the Rhône and Saône rivers, 250 miles from Paris and 218 from Marseilles. The commercial and fashionable quarters lie along the land between the rivers, and are connected with the suburbs beyond by numerous bridges. Lyons contains a Roman Catholic university with three faculties; a school of art with over 1,000 pupils; and a municipal library of nearly 120,000 volumes. The city is a fortress of the first rank, being defended by a double ring of forts. The staple industry is silk, it being computed that within the city and its environs as many as 85,000 hand-looms and 20,000 power-looms are employed in this manufacture. The list of notable persons born in Lyons includes the Roman general Germanicus and the Roman emperors Claudius. Caracalla and Marcus Aurelius. Population 472,114.

Lyons, a gulf of the Mediterranean, washing the southern coast of France. The Rhône, Hérault, Aude and some other rivers flow into this gulf. The principal towns on its coast are Marseilles, Toulon and Cette. The gulf is said to have been named from the lion, on account of the violent gales and storms to which it is subject.

Lyre (*līr*), one of the oldest forms of stringed instruments. The Greeks had a tradition that Mercury formed the lyre out of the shell of a tortoise; but we must seek its origin in Asia and infer its introduction into Greece through Thrace or Lydia. The Egyptians also had a tradition that the lyre was first invented in their country, but they seem to have adopted it from Assyria or Babylonia. The Egyptian lyre is unmistakably Semitic. The lyre, unlike the lute, cannot be stopped by the fingers and its sounds be thereby multiplied; and, as the number of its sounds can not be greater than the number of its strings, since the introduction of the modern musical scale it has fallen into disuse.

Lyre-Bird, an Australian bird, the male of which has the tail feathers arranged to look like a lyre. There are three species. These birds belong to the order of perching birds (*Passares*), but are abnormal and do not perch. They are the largest of all song-birds, their body being about the size of the ruffed grouse. The 16 feathers of the tail of the male form a beautiful ornament. It is the two external feathers, especially, that are curved in the form of a lyre; the others represent the strings. If the tail be removed, the bird is homely. The birds are of a sooty-brown color with reddish marks on the throat, wings and tail-coverts. They well imitate the song of other birds and, also, it is said, the bark of the wild dogs. They inhabit the brush or sparsely wooded portions of New South Wales, and are shy and difficult to approach.



LYRE-BIRD

Lysias (*lĭs'ĭ-ȧs*), one of the 10 Attic orators, son of a native of Syracuse, who flourished at Athens in the 4th century B. C., assisted in the expulsion of the Thirty Tyrants and in the restoration of the democracy in 403 B. C. He figured in Athenian politics as the public accuser of Eratosthenes, one of the Thirty Tyrants, and delivered a splendid oration which has come down to us with 30 or more of his speeches. His literary style is great, and had an important effect in Greek prose, while his oratory made him famous. He probably died in or soon after 380 B. C.

Lyt'ton, Edward Bulwer. See BULWER-LYTTON, EDWARD GEORGE.

Lyt'ton, Edward Robert, Earl of, poet, diplomatist and statesman, was born at London, Nov. 8, 1831, and was educated at Harrow and Bonn. All his active life (1849-91) was spent in the diplomatic service of Great Britain in Europe and America, except four years (1876-80) as viceroy of India. His literary works, of which perhaps the most popular is *Lucile*, have been published under the pseudonym of Owen Meredith. He also wrote *Clytemnestra*, *The Wanderer*, *The Ring of Amasis* and *Fables in Song*. He died at Paris, Nov. 24, 1891.

M

M (*ĕm*), the thirteenth letter, is a vocal consonant. It is made with the lips and nasal passages closed, and is therefore classed as a labionasal, as in *me*, *him*, *tame*. It also is a liquid and even a semivowel. Before *n* in the same syllable it is silent, as in *mnemonics*. The Romans used it as a numeral (1,000) as well as a letter. *M* also means em, a printer's term.

Mab, a fairy celebrated by Shakespeare, Ben Jonson and other poets. She usually is called Queen Mab, but this does not mean that she is queen of the fairies. That place belongs to Titania, the wife of Oberon. For a description of Queen Mab's mischievous ways, telling how she comes "athwart men's noses as they lie asleep" see Shakespeare's *Romeo and Juliet*. In Shelley's *Queen Mab* she is made queen of the fairies and given a much wider realm to reign over, — the deeds and thoughts of men.

Ma'bie, Hamilton Wright, an American writer, the possessor of a good literary style and a lecturer and editor of repute, was born in New York in 1846. He was a graduate of Williams College and Columbia Law School (1869). He became associate-editor of *The Outlook*. His works show an appreciation of the fitting and beautiful and a love of interpretative criticism, which have won a host of sympathetic readers. Among his works may be mentioned *Norse Stories from the Eddas*, *Nature in New England*, *Short Studies in Literature*, *Essays in Literary Interpretation*, *Nature and Culture*, *Books and Culture*, *The Life of the Spirit* and *William Shakespeare*. He died in 1917.

Macad'am, John Loudon. inventor of the system of roadmaking known as macadamizing, was born at Ayr, Scotland, Sept. 21, 1756. In 1801 he began to make experiments in roadbuilding, a work to which his future life was devoted. His system was adopted on nearly all the public roads of England, and was introduced into France and other countries. His principles may be briefly stated: It is not necessary to lay a foundation of large stones, as it is a matter of indifference whether the foundation be hard or soft. The material must consist of broken stones, one or two ounces in weight, scattered to a depth of from six to ten inches and pressed together as closely as possible. The road is to have a slight fall from the middle to the sides, and ditches are to be dug on each side of sufficient depth to drain it. Macadam was offered the honor of knighthood some time before his death, but declined it. He died on Nov. 26, 1836.

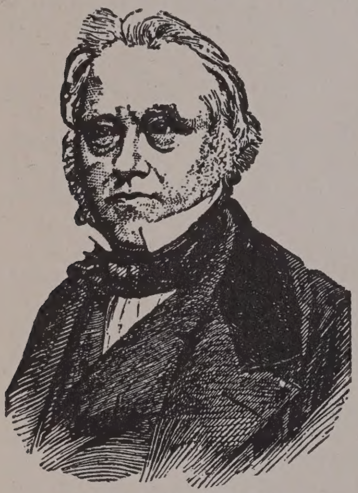
McAll' Mission, the largest Protestant mission in France, was founded in 1871 by the Rev. R. W. McAll and his wife. It embraces more than one hundred stations, nearly all in Paris, and is supported by Protestants of all denominations in England and America. Such has been the progress of this mission that in the 12th year after its foundation it held 15,000 meetings, attended by nearly 1,000,000 persons, and distributed more than 500,000 Bibles and tracts.

Macaroni (*măk-ȧ-rō'nĭ*), a peculiar paste or dough manufactured from wheat-flour into tubes, ribbons or threads. It is an Italian invention, and, although the process is very simple, the manufacture is almost wholly limited to Italy and France, probably because the wheat raised in those countries contains so large a proportion of gluten. Macaroni is used for soups, and is exported to all parts of the world.

MacAr'thur, Arthur, American soldier, lieutenant-general in the regular army, was born in Massachusetts, but served during the Civil War in the western army; entering the service as a lieutenant in the 24th Wisconsin Infantry, Aug. 4, 1862, and rising to a brevet colonelcy, given for conspicuous bravery at the successive engagements of Perryville, Stone River and Missionary Ridge. For gallantry in the latter engagement he was voted a medal by Congress. He served throughout the Atlanta campaign and was mustered out only after the final review of the volunteer forces, June 10, 1865. On Feb. 23, 1866, he was commissioned first lieutenant in the regular army and assigned to the 17th Infantry; but a few months later he was promoted to a captaincy and transferred to the 36th Infantry. At the outbreak of the war with Spain he was serving in the office of the adjutant-general with rank of lieutenant-colonel. On May 27, 1898, he was appointed brigadier-general of United States Volunteers, and promoted to major-general commanding the 2d division of the 8th army corps soon after, and assigned to duty in Havana. In 1899 he was sent to the Philippines where he rendered conspicuous service, was made brigadier-general in the regular army, and, on the retirement of General

Otis, placed in command of the army and made military governor. In February, 1901, he was promoted to major-general in the regular army and in time appointed assistant chief-of-staff. In 1906 he was promoted to lieutenant-general, and became ranking officer of the army of the United States.

Macassar (*mȧ-kăs′sẽr*), a strait about 400 miles long and from 100 to 200 wide, connects the Java and Celebes Seas, and separates Celebes from Java.


LORD MACAULAY

Macaulay (*mȧ-kạ′lĭ*), **Thomas Babington,** Lord, a great English historian and essayist and the most pictorial prose-writer in English literature, was born in Rothley, Leicestershire, Oct. 25, 1800. At 18 he entered Trinity College, Cambridge. His university career was very brilliant, in spite of his dislike to mathematics. Macaulay was admitted to the bar soon after graduation; but his love of literature was so great that he made no effort to secure a practice. At 25 he published an essay on Milton in the *Edinburgh Review*, which at once placed him in the highest rank of literature, and for nearly 20 years he continued to be one of the principal writers for that magazine. In 1830 Macaulay entered parliament, where his powers as a debater and orator proved fully equal to his talent as a writer. In 1834 he accepted the position of legal adviser to the supreme council of India, at $50,000 a year. He remained four years, during which he wrote his essays on Bacon and Sir James Mackintosh. Macaulay was elected to parliament from Edinburgh the year after his return from India, and during his few years in public life greatly increased the fame he had previously won. In 1848 appeared the first two volumes of his great work — *History of England from the Accession of James II*. The popularity of this book was greater, perhaps, than was ever secured by any history. The third and fourth volumes appeared in 1855, and were received with the greatest favor and enthusiasm, both in England and America. In 1857 Macaulay was made a peer of the realm under the title of Baron Macaulay of Rothley. In the same year he was elected a foreign associate of the French Academy of Moral and Political Sciences. He died on Dec. 28, 1859, and was buried in Westminster Abbey. See *Life and Letters* by Trevelyan

Macbeth′, a Scottish king, whose name has been immortalized by Shakespeare in his matchless play of *Macbeth*. In 1040 he slew Duncan, king of Scotia, and succeeded him. His 17 years' reign is described in the chronicles as a time of plenty. Alone of Scottish kings he made a pilgrimage to Rome (1050), where he gave very large alms to the poor. In 1057 Malcolm Duncan, who had fled to England after the murder of his father, returned to Scotland, and, marching a hostile force against Macbeth, defeated and killed him at the battle of Lumphanan, after which Malcolm was proclaimed king.

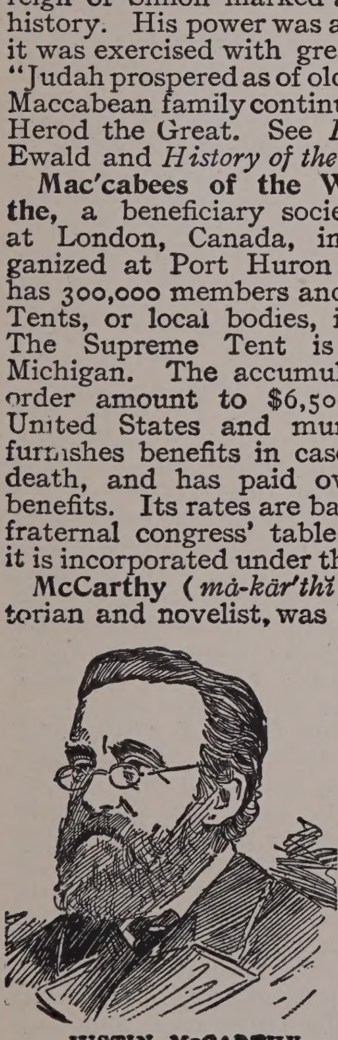
Macbeth, one of Shakespeare's most important tragedies, probably was written in 1605. It was acted as early as 1611 and published in 1623. King James I came to the throne two years before *Macbeth* was written, and possibly a desire to win court-favor influenced Shakespeare in producing this tragedy. A Scottish theme was admirable for this purpose. As a source for the plot Holinshed's *Chronicle of Scottish History* was used together with other Scottish sources. Banquo was a direct ancestor of James I, and he accordingly was portrayed in such a way as to arouse sympathy. Other touches in the play perhaps are attempts to please King James. The characters of Macbeth and Lady Macbeth are skilfully depicted and their crimes and subsequent downfall appear as the necessary outcome of their devotion to the god of ambition. There is much evidence of interpolation and mutilation in the text. *Macbeth* is the shortest of Shakespeare's plays, and the action is swift and bold. The supernatural element in the play may be an indirect compliment to King James' belief in witches. At any rate it is effectively most used. In this play Shakespeare has relieved the heavy tragic parts by light comedy in a most adroi. way. Lee, one of Shakespeare's biographers, justly says that this play ranks with the noblest tragedies, either of the modern or ancient world.

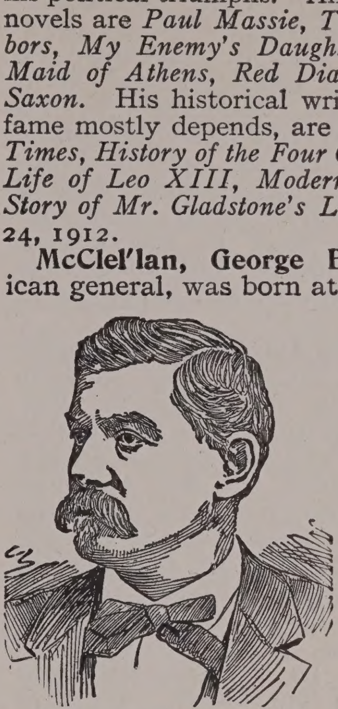
Maccabæus, Judas, 12th of the English oratorios by Händel. Words by Doctor Morrell. First performance at Covent Garden, April 1, 1747. The chorus, *See the Conquering Hero Comes*, is incorporated in this work, which is one of the most brilliant and popular of Händel's oratorios.

Maccabees (*măk′kȧ-bēz*), the name assumed by the patriotic Hebrew Mattathias (and his descendants), who first resisted the persecutions inflicted upon the Jewish people by the Syrian king, Antiochus Epiphanes (175–164 B. C.). Mattathias had retired with his five sons, at the beginning of these troubles, to a small place called Modin, between Jerusalem and Joppa, to mourn over the desolation of the city and the desecration of the temple. He was pursued by the Syrians. When one of their captains tried to bribe him to abandon the Jewish faith, he answered by slaying with his own hand the first Jewish renegade who approached the altar of idolatry. This bold act was the signal for a general outbreak. The five sons of Mattathias, with a few faithful followers, rose against the national foe, destroyed all traces of heathen worship, and then fled into the wilderness of Judæa. Not long after, they entered the adjacent cities and villages, circumcising the children and restoring the ancient religion. At the death of Mattathias, 166 B. C., his son Judas took command of the patriots, repulsed the enemy at Mizpah and other places, reconquered Jerusalem, purified the temple and restored the worship of Jehovah. Having further concluded an alliance with the Romans, he fell in battle with Bacchides. Judas was succeeded by his brother Jonathan, who also acquired the dignity of high-priest. Jonathan was treacherously murdered at Ptolemais, 141 B.C., and was succeeded by his brother Simon, the second of the five sons of Mattathias. The reign of Simon marked a new era in Jewish history. His power was almost absolute, but it was exercised with great moderation and "Judah prospered as of old." The reign of the Maccabean family continued until the time of Herod the Great. See *History of Israel* by Ewald and *History of the Jews* by Milman.

Mac'cabees of the World, Knights of the, a beneficiary society, was organized at London, Canada, in 1878, and reorganized at Port Huron in 1883. It now has 300,000 members and 5,000 subordinate Tents, or local bodies, in 55 jurisdictions. The Supreme Tent is at Port Huron, Michigan. The accumulated funds of the order amount to $6,500,000, invested in United States and municipal bonds. It furnishes benefits in case of disability and death, and has paid over $30,000,000 in benefits. Its rates are based on the national fraternal congress' table of mortality, and it is incorporated under the laws of Michigan.

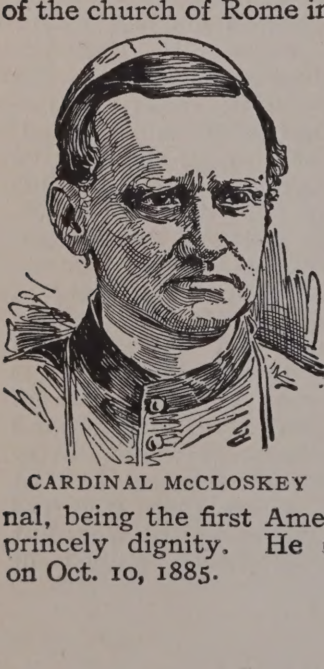
McCarthy (*mȧ-kär'thĭ*), **Justin,** Irish historian and novelist, was born at Cork, Nov. 22, 1830. He joined the staff of the *Northern Times*, Liverpool, in 1853, and in 1864 became chief editor of the London *Morning Star*. He resigned this position in 1864, and devoted the next three years to a tour through the United States. He entered the house of commons in 1879 as member for Longford, a Liberal, but his literary works soon extended his name much further than his political triumphs. Among his best-known novels are *Paul Massie, The Waterdale Neighbors, My Enemy's Daughter, Donna Quixote, Maid of Athens, Red Diamonds* and *A Fair Saxon.* His historical writings, on which his fame mostly depends, are *History of Our Own Times, History of the Four Georges, Life of Peel, Life of Leo XIII, Modern England* and *The Story of Mr. Gladstone's Life.* He died April 24, 1912.


JUSTIN McCARTHY


GENERAL McCLELLAN

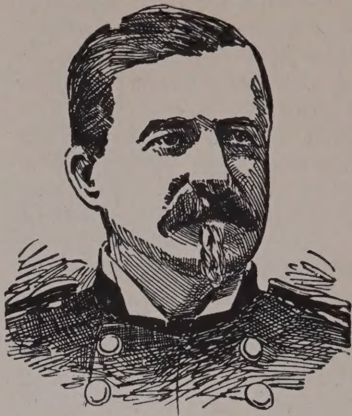
McClel'lan, George Brinton, an American general, was born at Philadelphia, Dec. 3, 1826. He graduated at West Point in 1846, one of his classmates being the renowned "Stonewall" Jackson. He served as an engineer during the Mexican War, winning a brevet - captaincy. He continued to serve as an officer in the regular army until 1857, when he resigned to engage in railroad business. When the Civil War broke out, Governor Dennison of Ohio appointed him major-general of Ohio volunteers, and in May he was appointed major-general of United States troops by President Lincoln. He was immedtately sent into West Virginia, and conducted a short and successful campaign against the Confederates. On account of this signal success McClellan was soon called to Washington to reorganize the Army of the Potomac. On the retirement of General Winfield Scott in November McClellan was made commander-in-chief. As an organizer he showed marked ability and efficiency; but he sorely tried the patience of the administration and the people by the slowness of his movements — rather than by his failure to move at all. At length in April, 1862, under the positive orders of President Lincoln he entered on his disastrous Peninsular campaign. He advanced within a few miles of Richmond, but after fighting what are known as the "Seven Days' battles" (June 25 to July 1) he was driven back and was directed to abandon the peninsula. A large part of his army was ordered to re-enforce General Pope's troops; but soon after the second battle of Bull Run, McClellan, in command of his army of the Potomac, marching northward, met the forces of General Lee at Antietam, Maryland, where there occurred one of the bloodiest battles of the war; but whatever advantage McClellan gained he failed to follow up, and General Lee was allowed to recross the Potomac without being molested. McClellan followed him into Virginia; but all his subsequent movements were so unsatisfactory to the president and cabinet, that in November he was relieved of his command and General A. E. Burnside appointed in his place. In 1864 he was the Democratic candidate against Lincoln for the presidency, but received the electoral vote of only three states — New Jersey, Kentucky and Delaware. In 1877 he was elected governor of New Jersey, and filled that office one term. He died at Orange, N. J., Oct. 29, 1885.

McClernand, John Alexander, an American lawyer and soldier, was born in Breckenridge County, Kentucky, in 1812. In 1832 he was admitted to the bar; and in this year also he served as a private soldier in a campaign against the Sac and Fox Indians. He afterwards became interested in trade; published a Democratic newspaper in Illinois; and from 1837 to 1842 sat in the Illinois legislature. From 1843 to 1851 he represented Illinois as a Democratic member of Congress. With the outbreak of the Civil War he was commissioned brigadier-general of volunteers. He took part in the battle of Belmont; and won distinction at the battle of Fort Donelson. In 1863 he relieved General Sherman of the command of the army against Vicksburg; but was shortly afterwards in turn superseded by General Grant. Until 1863 he commanded the 13th army-corps; but in November, 1864, he retired from military service. From 1870 to 1873 he was circuit judge in the Sangamon district, Illinois. In 1876 he was chairman of the Democratic national convention held in St. Louis. He died at Springfield, Illinois, September 20, 1900.



CARDINAL McCLOSKEY

McCloskey (*mȧ-klŏs'kĭ*), **John,** a cardinal of the church of Rome in America, was born at Brooklyn, N. Y., March 20, 1810. After pursuing a collegiate and theological course at St. Mary's College, Emmetsburg, Maryland, he was ordained a priest at St. Patrick's Cathedral, New York, Jan. 9, 1834. He was consecrated bishop on March 10, 1844; archbishop on May 6, 1864, and in 1875 was created cardinal, being the first American raised to that princely dignity. He died at New York on Oct. 10, 1885.



GEN. ALEX. M. McCOOK

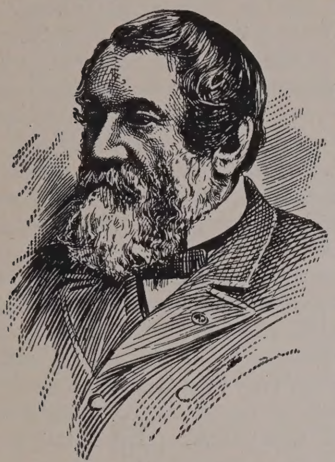
McCook', Gen. Alexander McDowell, was born in Columbiana County, O., April 22, 1831. He graduated at West Point in 1852. He was appointed colonel of the first Ohio regiment organized for service in 1861, which he commanded at the battle of Bull Run on July 21, 1861. He was afterwards promoted to the rank of major-general, and commanded a division at Shiloh and at Perryville. When General Rosecrans was placed in command of the army of the Cumberland, McCook was assigned to the command of the 20th army-corps, with which he took part in the battles of Stone River and Chickamauga. After the war he became colonel of the 6th Infantry, and for a time was in charge of the Military School at Fort Leavenworth. In 1895 he retired with the rank of major-general. He died on June 12, 1903.

McCook, Gen. Daniel, was born at Carrollton, O., July 22, 1834, and graduated at Florence College, Alabama, 1857. He entered the Union army as colonel of the 51st Ohio volunteers in 1861, being afterwards promoted to the rank of brigadier-general. In addition to a number of minor engagements, he participated in the battles of Perryville, Chickamauga, Missionary Ridge and Kenesaw Mountain, Ga. At the last he was killed on July 21, 1864.

McCook, Gen. Robert Latimer, was born in Columbiana County, O., Dec. 28, 1827. He was commissioned colonel of the 9th Ohio volunteers on the outbreak of the Civil War, and commanded a brigade in West Virginia under General Rosecrans in the summer of 1861, highly distinguishing himself in a number of engagements. He was in command of a brigade in General Buell's army in August, 1862, when he was shot by guerillas while sick and traveling in an ambulance near Salem, Ala.

McCor'mick, Cyrus H. Too little honor has been paid, heretofore, to the inventor and first successful manufacturer of the reaper, although its value to the world can scarcely be second to that of the cotton-gin. Eli Whitney gave cotton wealth to the southern states and cheaper clothing to all the world. Cyrus H. McCormick enormously increased and cheapened the world's supply of bread by making it possible to harvest grain on millions of acres of land that had never been under cultivation and that must have waited centuries on hand-labor.

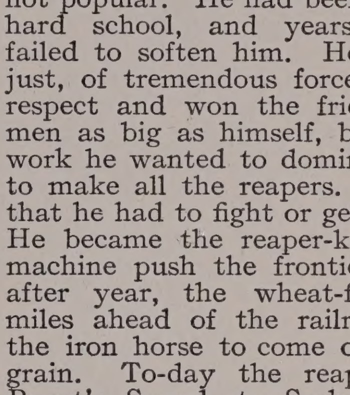
Born on a farm at Walnut Grove (W.) Va., February 15, 1809, three days later than Lincoln, the inventor of the reaper grew up under almost as hard conditions as the great emancipator. His home was a log-cabin that sheltered a family of nine, and the farm was poor, rough land that barely afforded a living. But the family came of Scotch Covenanter stock that had fought for religious liberty in Scotland and for political liberty and against the Indians in America. The father was a backwoods genius in mechanics. He invented a rude hemp-brake and clover-huller, and was experimenting on a reaper when Cyrus was born. Father and son became inseparable, and made many a queer contrivance that failed to work and made them objects of ridicule in an unenterprising, unimaginative community. When, in the autumn of 1831, the farmboy clattered out of the barnyard on his first reaper, he was given scant encouragement. The machine actually worked, but it was ten years before anyone could be induced to buy one. Had McCormick not had immense personal force and tenacity of purpose, his invention would have benefited the world little. Forty miles from a blacksmith-shop and 60 from a railroad or canal, with iron $75 a ton, he built a blast-furnace on the farm, dug ore out of the Alleghanies and smelted iron himself. In five years he made and sold fewer than 100 reapers.


CYRUS H. McCORMICK

At 37, with $300 in his belt, he left the farm on horseback and rode from New York to Missouri preaching his reaper. In Chicago he found a listener in Mayor Ogden. After two minutes' talk this typical Chicago man bought a half-interest in the new invention. Before the harvest of 1847 was ready to cut, $50,000 worth of reapers were sold. New markets for wheat were opened by the removal of the English corn-laws, and the discovery of gold in California made labor so scarce that the reaper suddenly became a necessity. Exhibited at the exposition in Crystal Palace, London, 1851, the London *Times* declared the fair worth all it cost if it had brought nothing else to England beside the new American reaper. When the war broke out, the 50,000 reapers in the field released 350,000 men for duty at the front. The world saw the United States support two armies in the field and still send grain abroad. He contributed liberally to the founding (1859) of McCormick Theological Seminary at Chicago, and established a chair in Washington and Lee University, Virginia. In the fire of '71 the McCormick works were destroyed, but the inventor was 62 years old and had a fortune of $4,000,000. He thought seriously of retiring and leaving the field to competitors. His wife, whose business sagacity had helped build up the enterprise and who was an unofficial adviser of importance, insisted upon rebuilding at once. These works have turned out 5,000,000 reapers, and to-day employ 6,000 workmen.

Personally Cyrus H. McCormick was not popular. He had been brought up in a hard school, and years and prosperity failed to soften him. Honest as the day, just, of tremendous force, he commanded respect and won the friendship of a few men as big as himself, but in his field of work he wanted to dominate. He wanted to make all the reapers. He said himself that he had to fight or get out of the fight. He became the reaper-king, and saw his machine push the frontier westward year after year, the wheat-field always ten miles ahead of the railroad and begging the iron horse to come on for the golden grain. To-day the reaper has gone to Puget's Sound, to Saskatchewan and to the Rio Grande. The inventor died on May 13, 1884, but it is scarcely conceivable that the McCormick Harvester Works should cease to exist, for they now supply a large percentage of the machines used in the wheat-fields in every country in the world.

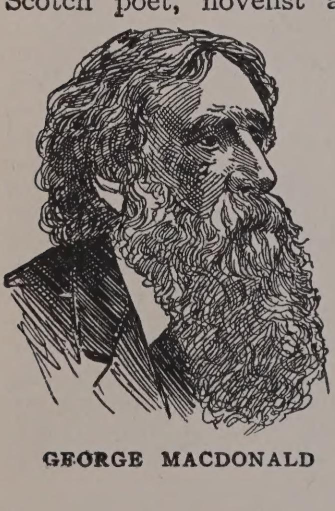
McCosh', James, a Scottish-American educator and philosopher, was born in 1811, in Ayrshire, Scotland. He was educated at the Universities of Glasgow and Edinburgh, and while there earned the honorary degree of M. A. by his paper on the *Philosophy of the Stoics*, through the influence of Sir William Hamilton. He was ordained at Brechin a minister of the Church of Scotland in 1835, but joined in the Free-Church movement in 1843. He was called to the chair of logic and metaphysics in Queen's College, Belfast, in 1851, and remained there until 1868, when the College of New Jersey, at Princeton, U. S. A. (now Princeton University), elected him as its president. By this step the college gained great benefit, for he imparted new life, and secured large donations by personal influence. The writings


JAMES McCOSH

of Dr. McCosh are marked by keen insight as well as clearness of statement; he belongs to the Scottish or "common-sense" school of philosophy. Among the most important of his works are *The Methods of Divine Government; Typical Forms and Special Ends in Creation; Intuitions of the Mind; Examination of Mill's Philosophy; Laws of Discursive Thought; Logic; Christianity and Positivism; Scottish Philosophy;* and papers on education and the relation of science to religion. In 1888 he resigned to give his attention more closely to philosophical writing, and published *First and Fundamental Truths* and *Religious Aspects of Evolution.* He died on Nov. 16, 1894.

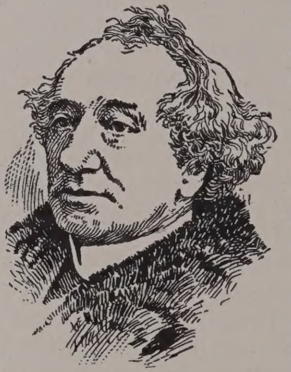
McCut'cheon, George Barr, an American writer whose short stories in many magazines have made him widely known, was born in 1866 in Indiana. After a boyhood on a farm, than which there would seem to be no better preparation for an active and busy life, he attended Purdue University, and afterwards was a reporter and editor. He is the author of a few novels as well as innumerable short stories. The novels include *Graustark, Castle Craneycrow, The Sherrods* and *Nedra.*

Macdonald (*mäk-dō-näl'*), **Etienne Jacques Joseph Alexandre,** Marshal of France, was born on Nov. 17, 1765, at Sancerre. He entered the army in 1784, and became a general in 1795, after having distinguished himself at Jemappes and also by crossing the Waal on the ice under the fire of the enemy. In 1809 Napoleon placed him in command of the right wing of the army of Italy, and he so distinguished himself at the battle of Wagram that he was created a marshal and duke of Tarentum. In 1813, at the battle of Leipsic, he assisted to cover the retreat of the French. He adhered firmly to Napoleon until the latter's abdication; but during the "hundred days" refused to take any command under him. He lived in honorable retirement until his death, which took place on Sept. 25, 1840. See *The Consulate and the Empire* by Thiers.



GEORGE MACDONALD

Macdonald (*măk-dŏn'ald*), **George,** a Scotch poet, novelist and preacher, was born at Huntly, Aberdeenshire, in 1824, and educated at King's College and Aberdeen University, studying subsequently at the Independent College, Highbury, London, for the nonconformist ministry. He preached for a short time in Surrey and Essex, but later became a lay member of the Church of England and devoted himself to literature. He visited the United States in 1872–73, lecturing and preaching in various cities. He published poems in 1855, 1857, 1864, 1868 and 1881. He also published a large number of novels, among which are *David Elginbrod; Annals of a Quiet Neighborhood; Robert Falconer; Wilfrid Cumbermede; The Marquis of Lossie; Sir Gibbie; Mary Marston; Lilith; Alec Forbes of Howglen; Thomas Wingfold, Curate; Salted with Fire; The Seaboard Parish;* and *St. George and St. Michael.* His religious and theological works, including *The Hope of the Gospel, Gifts of the Child Christ* etc., are not so well-remembered; but some attracted no little attention at their publication, particularly *Unspoken Sermons* and *Miracles of Our Lord.* His stories are of unequal merit, the *Annals of a Quiet Neighborhood, Robert Falconer* and *Wilfrid Cumbermede* perhaps being best known. Many of his children's stories and poems, as *At the Back of the North Wind,* are delightful reading, full of graceful human fancies, with a tinge of mysticism or rather of the mystery of child-life. He died in 1905.



SIR J. A. MACDONALD

Macdon'ald, Right Hon. Sir John Alexander, was born in Scotland, 1815, but removed to Canada when a child. He was educated at Royal Grammar School in Kingston, Ontario, and called to the bar in 1836. He was a member of the executive council in the Morris administration (1847–8), and was a member of various governments, holding different portfolios at intervals until 1858, when, as prime minister, he and his cabinet resigned. He became attorney-general in the Tache-Macdonald government from 1864 until the union of the provinces in 1867. He was a delegate to the Charlottetown conferenc in 1864 and to that in Quebec the sam year, and was chairman of the Londo colonial conference (1866–7) when the act of union, the British North America act, was passed by Parliament. He formed the first government for the new Dominion in 1867, and was minister of justice until 1873, when he resigned on account of the Pacific Railway charges. In 1871 he was one of Her Majesty's joint high-commissioners in the Alabama claims, the settlement of which was embodied in the Treaty of Washington signed in 1871. He sat for Kingston in the Canadian Assembly from 1844 until the union, and for the same place in the Commons for several terms. In 1880 he visited England with the ministe of railways and agriculture, and there they arranged the contract for the construction of the C. P. Railway to which Parliament has given effect. One of Canada's most distinguished sons, he died in 1891.

MacDonald, James Ramsey. During the Boer War England waged in South Africa, two men, since become great, stood firmly opposed to the conflict. One was David Lloyd George, Great Britain's World War premier. The other was James Ramsey MacDonald, Great Britain's first Labor premier. He was born of poor, land-renting parents in northern Scotland in 1866. As a young man he moved to London, and at twenty-five was secretary to a member of parliament, and a journalist. He was elected on the Labor ticket to the House of Commons in 1906, and from then until 1914 was the actual, though not in name, head of the Labor party, uniting the intellectual socialists with the trade unions, and becoming known as a safe and sane leader whose socialism assumed the aspect of steady social reform, not revolution. During the World War he was out of politics as he does not believe in war. Following the war, Labor again became strong politically, and during 1924 MacDonald became premier, succeeding Stanley Baldwin, who in turn succeeded MacDonald late in the same year.

McDonogh (*măk-dŏn'ō*), **John,** American philanthropist, was born at Baltimore, Dec. 29, 1779, and died in Louisiana, Oct. 26, 1850. He removed to New Orleans in 1800, and accumulated a fortune of over $2,000,000. Between 1822 and 1840 he freed his slaves and sent shiploads of freedmen at his own expense to Africa. He bequeathed the bulk of his fortune to Baltimore and New Orleans for free schools. Since 1873 the McDonogh labor-schools at Baltimore have taught farming to 70 boys each year.

McDonough (*măk-don' ō*), **Thomas,** an American naval officer, born in Delaware, Dec. 23, 1783. He became a midshipman in February, 1800, and belonged to the *Philadelphia*, which was one of the squadron employed against Tripoli in 1803. He afterwards served in the *Enterprise*, commanded by Decatur, and participated in the various attacks upon Tripoli in 1804. In 1814, during the second war with Great Britain, he commanded a squadron on Lake Champlain, and gained a decided victory over a British squadron under command of Captain George Downie. For this service he was promoted to the rank of captain and was presented with a gold medal by Congress. Vermont also gave him an estate overlooking the scene of the engagement. He died at sea, Nov. 16, 1825.

McDow'ell, Irvin, a United States soldier, was born in Franklin County, O., Oct. 15, 1818. He graduated at West Point in 1838; and during the Mexican War was brevetted captain for his gallant conduct at the battle of Buena Vista. At the opening of the Civil War he was commissioned brigadier-general, and placed in command of the army organized for an advance upon Richmond. His plan of the battle of Bull Run was without fault, and his conduct all that could be desired in a general; but he was unable to arrest the retreat of his troops, when they became panicstricken in the afternoon; and for some time afterwards McDowell was made the object of severe and unjust criticism. He was afterwards placed in command of an army-corps under McClellan and Pope, and was with the latter at the second battle of Bull Run, Aug. 29–30, 1862. He died at San Francisco, May 5, 1885.

Macduff', a Scottish nobleman and one of the leading characters in Shakespeare's immortal *Macbeth.*

Mace, the aril or inner covering of the nutmeg. It is blood-red and somewhat fleshy when fresh. It is prepared for market by drying for some days in the sun. Mace is used as a spice, and its flavor is very similar to that of the nutmeg. It is imported chiefly from Penang and Singapore, where it is received from the Spice Islands.

Macedo'nia (*măs'ē-dō'nĭ-ȧ*), originally a small country in Europe, north of Thessaly and the Ægean. Perdiccas I, about 700 B. C., is reputed to have been the first king of Macedon, but it was not until the accession of Philip, 359 B. C., that the power of Macedon began to be felt by Greece and other nations. Philip applied himself vigorously to developing the resources of his kingdom, and laid the foundations of the greatness it afterward assumed. His son, Alexander the Great, conquered Persia and brought half the known world under his sway; but a few years after his death the Macedonian empire was divided into four kingdoms under his principal generals. In 168 B. C. Macedonia was conquered by the Romans, and 25 years later was made a Roman province. The country now is under the dominion of Turkey.

Maceo (*mä'sā-o*), **Antonio,** a mulatto officer of the insurgent army in Cuba, was born at Santiago, Cuba, July 14, 1848. His career during the ten years' war, 1868–78, displayed natural abilities as a soldier, and at Guimaro he defeated the Spanish under Weyler. He attempted, though unsuccessfully, to start another revolution in 1890. He took part actively in the uprising of 1895, and, second only to Maximo Gomez, was rated the ablest of the insurgent leaders. He was killed by the Spanish in a skirmish near Mariel, Dec. 2, 1896.

McGee', Hon. Thomas D'Arcy, was born in County Louth, Ireland, 1825, and came to America in 1842. When only 17 his newspaper articles attracted attention. Returning to Ireland, he became chief editor of *The Freeman's Journal*, and afterwards was one of the editors of the Dublin *Nation*, the organ of the Young Ireland party. He returned to America in 1848, went to Canada, represented Montreal in Parliament for several years, and was a member of the Macdonald-Dorion administration. He was the most magnetic orator in Parliament and an eloquent popular lecturer. His *History of Ireland* added to his reputation. The lessons he had learned in 1848 caused him to warn his countrymen against extreme views and policies. He earnestly attacked Fenianism, and this led to his assassination in 1868. The Canadian government provided a state-funeral.

McGill' University almost alone among the higher institutions for learning in Canada owes its origin to private endowment. It was founded under the will of James McGill (1744–1811), obtained its charter in 1821, and began its work wth the two faculties of law and medicine in 1829. Although work was seriously hampered for a time by litigation and by lack of funds, an era of prosperity was ushered in by the amended charter of 1852 and the appointment of a new principal in 1855. The supreme authority is vested in the governor-general of Canada as visitor. The corporation includes the governors, principal and fellows, who regulate courses of study, the granting of degrees and affairs of discipline. The principal, who ex-officio is vice-chancellor, is the supreme administrative officer. There are 43 fellows who represent the various departments, the graduates and other bodies. The faculties include arts, applied science, law, medicine and agriculture. There also is a graduate department. The work of the university is carried on in McGill College, Royal Victoria College for women and other university buildings in Montreal, which are all beautifully located below the mountain, and in MacDonald College at St. Anne de Bellevue.

The university is affiliated with Oxford, Cambridge and Dublin Universities in Great Britain. Four theological colleges (all in Montreal) are also affiliated with it. They are: The Congregational College of Canada; The Diocesan College of Montreal; The Presbyterian College of Montreal and The Western College of Montreal. McGill University annually enrolls more than 2,500 students. McGill has been fortunate in enlisting the sympathy and aid from time to time of such men as the late Lord Strathcona and Sir William Macdonald, whose repeated gifts amount in the aggregate to millions of dollars. Sir William Peterson at present is the principal and vice-chancellor of McGill.

McGregor, Robt. See Rob Roy.

Machiavelli, (*mä'kē-à-vĕl'lē*), **Niccolo di Bernardo dei,** whose name has become proverbial for intrique and duplicity, was an Italian statesman and diplomatist, was born at Florence, May 3, 1469, and died there, June 22, 1527. In 1498 Machiavelli was appointed secretary to the ten citizens chosen to direct civil and military. This position, which was one of great importance, Machiavelli held for 14 years, during which he was sent on a large number of foreign embassies. On the restoration of the Medici, in 1512, he was arrested on a charge of conspiracy. Although released, he was obliged for several years to withdraw from public life, and betake himself to literature. In May, 1527, the Florentines again drove out the Medici rulers and proclaimed the republic; but Machiavelli was so distrusted that he was not allowed to take any active part in the movement for liberty. This disappointment, added to his already feeble health, brought on an illness of which he soon died. Machiavelli's writings comprised several volumes, his most importnat work being *Il Principe* or The Prince. The purpose of this book is to reveal the means by which princes and rulers may maintain authority over their subjects; and the author boldly lays down the doctrine that to sustain their power rulers may use all possible means, including fraud and treachery. See *Life* by Villari and *Florentine History* by Napier.

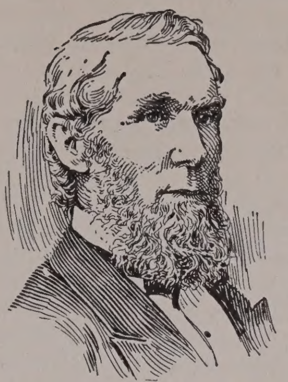
Machine'-Gun, a gun of small caliber, but ranking with ordnance rather than small arms, is a weapon of warfare which is loaded, unloaded and fired wholly or in part by mechanical contrivances, and delivers a number of projectiles. Some machine-guns deliver single shots in rapid succession; others a number of shots simultaneously. The famous Gatling gun, invented in 1861 by R. J. Gatling of Indianapolis, combines both these advantages. It has ten barrels, from which no less than 1,632 rounds have been discharged in 84 seconds. The Gatling gun, as well as the Hotchkiss, Gardner and Nordenfeldt guns, is worked by an externally applied force. On the other hand, many machine guns are now operated in an automatic manner. These guns are often operated by the powder-gas driving a piston. This is the principle of the operation of the Colt automatic gun and the Hotchkiss automatic gun (not the revolving cannon). The Maxims and "pompoms" are operated by the recoil of the barrel after firing. The semiautomatic mechanism of the Maxim-Nordenfeldt of the U. S. navy is capable of driving unusually heavy guns. Machine-guns are not adapted for accurate shooting; but rather for dispersing masses of the enemy at close quarters. They are light, easily moved with a flying detachment, and well-adapted for mounting in boats. The ordinary rate of firing for a Colt or Maxim gun is about 350 rounds per minute; and the maximum range about 2,500 yards. The success of the artillery of an army would appear to depend rather upon the long-range field-guns, firing shrapnel, than upon machine-guns proper, which are hopelessly outranged.

McKay′, Alexander Charles, principal of McMaster University, Toronto, was born in Beamsville, Ontario, in 1861. He attended Grimsby High School and London Collegiate Institute, and graduated at Toronto University in 1885, winning a gold medal. He was a teacher in public and in high schools, and was fellow in physics in the University of Toronto (1887). He was appointed professor of mathematics in McMaster University (Baptist) in 1890, was made dean in 1901 and chancellor in 1905. He is joint-author of the high-school arithmetic exclusively authorized for Ontario for 15 years. He now is Chancellor of McMaster University. See McMASTER UNIVERSITY.

McKees′port, Pa., a city in Allegheny County, southwestern Pennsylvania, the center of an extensive bituminous coal-trade and commerce in natural gas, which abounds in the region. It is situated ten miles southeast of Pittsburg, on the Monongahela River at the mouth of the Youghiogheny, on the Baltimore and Ohio, Pennsylvania and Pittsburg and Lake Erie railroads. It has a large number of manufacturing industries, among them being the largest wrought-iron pipe-works on the continent, with ample capital and employing over 6,000 hands. There are establishments engaged in the manufacture of iron and steel, locomotives, railroad cars, glass works and lumber mills. The city also has considerable river-trade. Population, which has of late largely increased, 50,000

McKen′na, Joseph, an American lawyer and jurist, was born at Philadelphia, Pa., Aug. 10, 1843. At 12 he removed to California with his parents. He was educated at the College of St. Augustine, Benicia, studying law after his graduation and being admitted to the bar in 1865. He was soon elected county-attorney of Solano County, and in 1875 was sent to the legislature. Although twice defeated for Congress, he ran again in 1884 and was elected, serving four consecutive terms. During his life in Congress he was an intimate friend of Mr. McKinley and assisted in framing the McKinley tariff (1890). He succeeded Judge Sawyer upon the circuit bench of the Pacific slope in 1892, appointed by President Harrison, and remained there until called by President McKinley to a seat in his cabinet as attorney-general. In 1897 he was appointed to the supreme court, succeeding Justice Field.

Mackenzie (*mȧ-kĕn′zĭ*), **Alexander,** a Canadian statesman, was born near Dunkeld, Scotland, Jan. 28, 1822. He moved to Canada in 1842, engaging in business as a contractor until 1861, when he was elected to the assembly, remaining until the formation of the Dominion parliament, to which he was also elected, representing the same constituency for 25 years. He was offered a seat in the Canadian cabinet in 1865, but declined it. Upon the resignation of Sir John Macdonald he became premier of the Dominion and minister of public works. Upon the election of a Conservative majority to parliament in 1878, he, with his cabinet, resigned his position. At various times he visited his native country and was treated everywhere with distinction, being offered knighthood three times; but each time he declined the honor. Possessed of great ability as an administrator and splendid gifts as an orator, his influnce throughout the Dominion is still felt. He died at Toronto, April 17, 1892.



HON. A. MACKENZIE

Mackenzie, Sir Morell, was born in 1837 at Leytonstone, England, and studied at London Hospital Medical College, at Paris and at Vienna. In 1863 he founded the Hospital for Diseases of the Throat at London, and his essay on *Diseases of the Larynx* won the Jacksonian prize from the Royal College of Surgeons. He attended Emperor Frederick III of Germany (1888) during his last illness, and pulished *The Fatal Illness of Frederick the Noble* in vindication of his treatment. He was a corresponding member of the Imperial Royal Society of Physicians of Vienna and of the Medical Society of Prague and an honorary fellow of the American Laryngological Association. He was the author of a systematic treatise on *Diseases of the Throat and Nose,* which has been translated into French and German and is well-known in America. He died on Feb. 3, 1892, after an illness of only a few days.

Mackenzie River. Starting at Great Slave Lake in Mackenzie District this river runs north to the Arctic Ocean, 2,400 miles. It is one of the eight largest rivers in the world, a tremendous stream, from two to four miles in width its whole length. It is navigable all the way except at the mouth, where it spreads into a great many branches, and like all rivers of the kind has short bars which would require dredging. Navigation would be practicable for five months of the year. Its source is in Central Alberta. It drains a greater territory than that drained by the Great Lakes and the St. Lawrence. The trees in the basin throw out their leaves about the middle of May before the ice leaves the river. Some steamboats have been plying successfully for years on stretches of the Mackenzie, Peace, Liard and Athabasca Rivers. Before a committee of the senate in 1906 the striking fact was elicited that, by the construction of two tramways of an aggregate length of 20 miles, a continuous water-and-rail route of 3,000 miles, the longest inland water-route in the world, can be provided.

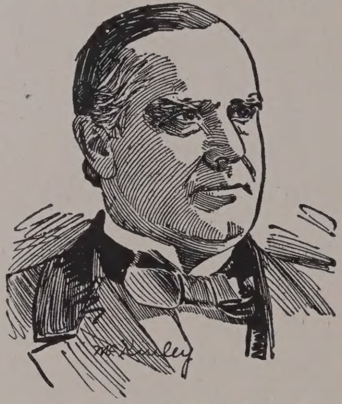
Mackenzie, Sir George. The fact that rapping on his tomb in Greyfriar's churchyard, and crying "bluidy MacKenzie, come 'oot if ye dar" is still a test of courage among the boys of Edinburgh, is an echo, three centuries long, of the evil fame of Sir George Mackenzie, who will always be identified with the worst features of the reign of Charles II. His cruel record as the presiding judge in trials for witchcraft, commended him for service as the tool of the king in his attempt to force the Scotch into the established church. Unlike Robespierre (*q. v.*), he spent his old age in the enjoyment of the fortune he thus acquired and in literary work, including a romance, a moral essay, entitled *Preferring Solitude to Public Employment, A short Discourse on Several Divine and Moral Subjects, A Discourse Upon the Laws and Customs of Scotland in Matters Criminal, Vindication of the Government of Scotland During the Reign of Charles II*, and *Memoirs of the Affairs of Scotland.* Andrew Lang (*q. v.*) found his character of so much interest that he wrote the story of his life under the title *Sir George Mackenzie, of Rosehaugh* (1909).

Mackenzie, William Lyon, was born in Dundee, Scotland, in 1795, came to Canada in 1820, and edited *The Colonial Advocate* in 1824, in which he criticised the government and was greatly disliked by the official party. A mob destroyed his printing-office in 1826, a foolish act which gave him increased influence. In 1828 he obtained a seat in Parliament. His newspaper criticisms continued, and the government party on the plea of breach of privilege attempted to expel him from the Legislature. He was five times expelled and as often re-elected. He went to England in 1832 to make known his grievances, and the imperial government condemned these arbitrary proceedings. A man of great force and influence, he became Toronto's first mayor in 1836. He was prominent in the rebellion of 1837 and 1838. Misjudged as he was in this matter, great good came to the people. At different times he endured poverty and imprisonment, and was the only Canadian refugee to whom an amnesty was refused. .Returning to Canada he was elected for Haldimand County in 1850, resigning in 1858. His public honor and integrity were never questioned.

Mack'erel, an important food-fish of the North Atlantic from Cape Hatteras to Labrador and Newfoundland. It is steel-blue above with dark bars, and silvery beneath. They attain a length of 17 or 18 inches or even longer; but the average length of those caught for the whole coast is about 12 inches. Their food is small crustacea, the spawn and young of other fishes, and jellyfish. They occur in large schools, and many vessels of fine modern construction are engaged in the mackerel fishery. They are caught with hooks and lines and with nets. They are salted and very extensively eaten. In 1898 the market price of those landed at Boston and Gloucester amounted to nearly three million dollars.

Mackinaw or **Mackinac** (*măk'ĭ-nạ*), an island three miles long and two broad in the Strait of Mackinaw, which connects Lakes Huron and Michigan. The village on the island is the seat of Mackinaw County and a fashionable summer resort. Fort Mackinaw is situated on a rocky eminence, overlooking the village and commanding the strait. Population 800.

McKin'ley, William, twenty-fourth president of the United States, was born at Niles, O., Jan. 29, 1843. He was educated at public schools, Poland Academy and Allegheny College. For a short time he taught school, but in the first summer of the Civil War, when but 18 he enlisted as a private. Next year he was made second lieutenant; the following year first lieutenant; and captain in 1864. He was brevetted major by President Lincoln for gallantry in the field on March 13, 1865. He served on the staffs of Generals Rutherford B. Hayes, George Crook and Winfield Scott Hancock. When mustered out, July 26, 1865, he was assistant adjutant-general, 1st division, 1st army-corps. He began the study of law; took a course at Albany (N. Y.) Law School; was admitted to the bar in 1867; and settled at Canton, O. Being elected to Congress in 1876, he served continuously in the house until March, 1891. As chairman of the committee on ways and means, he reported to Congress the tariff bill of 1890, known since as the McKinley bill, taking advanced ground in favor of a high tariff. He was elected governor of the state in 1891, and re-elected in 1893. In 1896 he was nominated for president by the Republicans and was elected, receiving in the electoral college 271 votes against 176 for William J. Bryan. The issue that year was free coinage of silver, Mr. Mc-



WILLIAM McKINLEY

Kinley opposing and Mr. Bryan favoring. The first year of his administration was marked by the stirring events and diplomatic steps which led to the intervention of the United States on behalf of the oppressed Cubans. Early in the second year war with Spain was declared (April 20, 1898). An army of 200,000 men was called out, and speedily organized and equipped, and the battles of the war were fought, beginning with the naval victory in Manila Bay, May 1st, and closing with the surrender of the Spanish army at Santiago, July 14th. By subsequent treaty Spain ceded to the United States Porto Rico and the Philippine Islands. A revolt of the Filipinos under Aguinaldo led to a protracted struggle which was not ended when the campaign for the succeeding presidential election occurred in 1900, and naturally this election turned largely upon the causes, conduct and results of the war. Mr. McKinley was again elected, a second time defeating Mr. Bryan, who again was the nominee of the Democratic party. Meantime the United States had taken a prominent part in the capture of Tien-tsin and Peking, China, relieving the legations without a declaration of war. The struggle in the Philippines was brought to a close early the next year and military rule was superseded by the establishment of civil government on July 4, 1901. In meeting the grave questions which arose during a period fraught with events of far-reaching importance to the nation Mr. McKinley displayed high qualities as a statesman and political leader, and gained the esteem of men of all parties as a pure, able and patriotic executive. While attending the Pan-American Exposition at Buffalo, President McKinley was mortally wounded by an anarchist, Leon F. Czolgosz, during a public reception in the Temple of Music, Sept. 6, 1901. Czolgosz took his place in the line of those who were shaking hands with the president, and, as he presented his left hand, fired two shots from a pistol concealed in his right hand by a handkerchief. One shot was not serious, but the other proved fatal. Prompt and skillful surgical attention averted the dreaded result for a few days, but the end came on Sept. 14. The death of the beloved president and revered chief of the state, in such cruel circumstances, fell with instant and crushing effect upon the nation, and hushed to an awed silence its activities. Foreign sympathy for the country's loss was profound and widespread, for Mr. McKinley was held in high regard abroad, as he was widely, sincerely and deservedly loved at home. His painstaking and tireless devotion to the duties of the executive office, his patriotism which was above all personal ambition, his wise guidance of the nation through grave perils to a height of prosperity before unknown, the purity of his personal character, the warmth of his friendship and the courage and Christian resignation displayed in the closing hours of his life combine to give to William McKinley an honored place in the records of the nation. His body was taken to Washington, where an impressive funeral service was held in the rotunda of the capitol, and thence it was carried to Canton, Ohio, where burial occurred Sept. 19, 1901. A magnificent monument erected by popular subscription, now marks his resting place.

McKin'ney, Tex., county-seat of Collins County, is located in the black-land belt. Among its leading industries are cotton-gins, a cotton compress, flour and cotton oil mills, machine and repair shops. McKinney has good public schools, a business college and training school, several churches, electric service with Sherman and Dallas, two light-plants, waterworks and sewerage system and the service of two railroads. Population 8,000.

MacLar'en, Ian. (See Watson, John.)

Maclaren, John J., was born at Lachute, Quebec, July 1st, 1842. He was educated at Victoria and McGill Universities. He practiced law at Montreal, 1867-84, and in Toronto, 1884-1902, when he was appointed justice of court of appeals. He has been regent of Victoria University since 1870, is vice-chancellor, and has been senator of Toronto University since 1891. He was secretary of the British and American joint commission under the treaty of 1863 from 1867 to 1870. He is the author of *Bills, Notes and Cheques; Banks and Banking,* and *Roman Law in English Jurisprudence.*

Maclure (*mak-lūr'*), **William,** the "father of American geology," was born at Ayr, Scotland, in 1763, but settled in the United States in 1796. In 1803 he went to Europe as one of the commissioners to adjust the claims of American citizens against France for losses of property sustained during the Revolution in that country. While in Europe he gave a great deal of attention to its geology, and on returning undertook a private geological survey of the United States. He visited nearly every state and territory, crossing the Allegheny Mountains many times on foot. At Philadelphia he long was president of the Academy of Natural Sciences. He died near Mexico in 1840.

McMahon (*mȧk'mȧ-ôn'*), **Count Marie Edme Patrice Maurice,** ex-president of the French republic, was born at Sully, near Autun, Nov. 28, 1808. Entering the army at an early age, he saw active service in Algeria, especially distinguishing himself at the storming of Constantine in 1837. He commanded the division that stormed the Malakoff at Sebastopol during the Crimean War, and in the Italian campaign of 1859 was created a marshal of France for the decisive part he took in the battle of Ma genta. In the Franco-German War of 1870 he commanded an army-corps. Although defeated and captured at Sedan, his military reputation remained untarnished. At the close of the war he was made commander of the army of Versailles, with which he suppressed the Commune that held sway in Paris during many weeks. On the retirement of M. Thiers from the presidency in 1873 McMahon was chosen his successor for a term of seven years, but resigned on Jan. 30, 1879. He died at Paris on Oct. 18, 1893

McMas'ter, John Bach, Ph. D., Litt. D., an American scholar and writer. Born in Brooklyn, June 29, 1852, he was educated in the New York public schools and the college of the City of New York. He became instructor in Civil Engineering in Princeton (1877) and in 1883 Professor of American History in Pennsylvania University. In 1883 he began the issue of his *History of the People of the United States*, a very important work corresponding to Green's (*q. v.*) *History of the English People.*

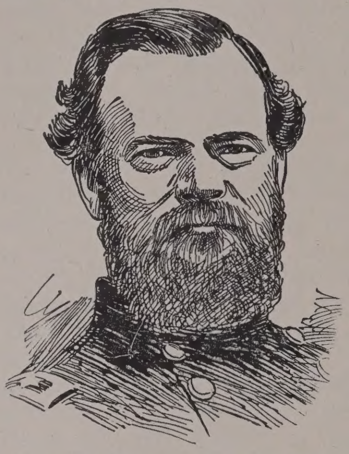
An American history for schools on the same plan, by Dr. McMaster, has helped to effect a marked change in methods of teaching. The eighth and last volume of his larger history appeared in 1913. His other works include: *Bridge and Tunnel Centers, Lives of Webster and Franklin, The Monroe Doctrine, Studies in American History* and *The Struggle for the Social, Political and Industrial Rights of Man.*

McMon'nies (*măk-mŭn'nĭz*), **Frederick William,** an American sculptor, was born at Brooklyn, N. Y., Sept. 28, 1863. He studied art in the rooms of Augustus St. Gaudens, and subsequently pursued his course at Paris, London and Munich. His best-known work was the great fountain in the principal court of the Columbian Exposition at Chicago. He also modeled the statue of Nathan Hale, which was erected in City Hall Park, New York, as well as several other public monuments. These include Sir Harry Vane for Boston Public Library; the Battle Monument, with its colossal figure of Victory, at West Point; and the army and navy groups for the Soldiers' and Sailors' monument at Indianapolis. Among his other productions are the bronze doors and a statue of Shakespeare for the Congressional Library, Washington, D. C. He received the Decoration of the Legion of Honor from the French government in 1896.

Ma'con, Ga., the capital of Bibb County, on Ocmulgee River, in central Georgia, traversed by nine or ten lines of railway. It has many manufacturing establishments, representing various industries, the chief of which are those devoted to textile fabrics, together with a large commercial trade. It has many schools and churches and a public library, and is the seat of Mercer University (Baptist), the state academy for the Blind, Alexander Free School, Jones Home for Indigent Women, Wesleyan Female College, one of the oldest female colleges in the United States, and other educational and charitable institutions. Population 65,000

Ma'con, Nathaniel, a North Carolina statesman, was born in Warren County, of that state, in 1757. He served as a private in the Revolutionary War, and was a member of the legislature from 1780 to 1786. He was a member of Congress from 1791 to 1815 and of the United States senate for the 13 following years, making a continuous service of 37 years, the longest on record. He died on June 29, 1837.

McPher'son, James B., was born in Sandusky County, O., Nov. 14, 1828, and graduated from West Point at the head of his class in 1853. In August, 1861, on account of his superior qualifications as an engineer, he was promoted to the rank of lieutenant-colonel and placed on the staff of General Halleck, commanding the department of the Missouri. In his capacity as staff-officer General McPherson was with Gen. Grant at Forts Henry and Donelson, Shiloh and the siege of Corinth, rendering service that was gratefully acknowledged by that general; and during the Vicksburg campaign in 1863 he commanded the 17th army-corps which so successfully fought the battles of Raymond and Champion Hill. During Sherman's Atlanta campaign McPherson commanded the army of the Tennessee, displaying the highest soldierly qualities in every engagement until he was killed in the battle before Atlanta, July 22, 1864. General McPherson was tall and imposing in appearance but gentle and unassuming in manner, and his death was deeply lamented by all the officers and soldiers in his command. "To know him was to love him" was the high tribute paid to him by General Grant.



GENERAL McPHERSON

Macready (*măk-rē'dĭ*), **William Charles,** an English actor, was born at London, March 3, 1793. At an early age he was sent to Rugby to be educated for the bar, but his father's financial embarrassments forced him to adopt the stage as his profession. He made his first appearance as Romeo at Birmingham at the age of 17. Six years later, Sept. 16, 1816, he made his London début, playing Orestes at Covent Garden, and after years of patient effort took rank among the leading English actors. In December, 1837, he inaugurated his famous Covent Garden management, during which he did much to improve and elevate the English stage. Macready made a number of visits to the United States, during the last of which a riotous mob, trying to break into Astor Place for the purpose of attacking him, was fired upon by the military and several lives were lost. Macready took his farewell of the stage at Drury Lane, Feb. 26, 1851, and passed his remaining days in retirement at Sherborne and Cheltenham; dying at the latter on April 27, 1873. As an actor Macready sought to combine the dignity of the Kembles with the naturalness of Kean. In addition to being an actor of great power, he was a man of fine literary taste and of pure, elevated character. See *Biography* by Littleton.

Macrosporangium (*măk′rō-spō-răn′jĭ-ŭm*) (in plants). See MEGASPORANGIUM.

Macrospore (*măk′rō-spōr*) (in plants). See MEGASPORE.

Macrosporophyll (*măk′rō-spōr′o-fĭl*) (in plants). See MEGASPOROPHYLL.

MacVeagh (*măk-vā′*), **Wayne,** lawyer and diplomat, was born near Phœnixville, Chester County, Pa., April 19, 1833. He graduated at Yale in 1853, was admitted to the bar in 1856, and three years later was elected district-attorney of his native county, where he served till the outbreak of the Civil War. He was commissioned a captain of infantry in 1862 and major of cavalry in 1863. Mr. MacVeagh was appointed minister to Turkey by President Grant in 1870. He became attorney-general in the cabinet of President Garfield, but resigned upon the inauguration of President Arthur. Mr. MacVeagh supported Grover Cleveland for president in 1892, and was sent as minister to Italy in 1893. For years he was a prominent leader of the Civil Service Reform Association of Philadelphia. He died in 1917.

Madagascar (*măd′ȧ-găs′kȧr*), a large island off the southeastern coast of Africa, from which it is separated by Mozambique Channel. Madagascar is the fourth largest island in the world, reckoning Australia as a continent, being 980 miles in length, and its greatest breadth is 360 miles. Its total area is 228,000 square miles. Madagascar consists of an elevated region in the center, 3,000 to 5,000 feet above the sea, and a nearly level country surrounding the high land. The island is also surrounded with a belt of forest from 10 to 40 miles wide. The former capital, Antananarivo, is situated near the center of the island, and contains about 100,000 inhabitants. The chief ports are Tamatave on the eastern coast (population 15,000) and Majungà on the northwestern coast (about 250 miles from Africa), population 5,000. English missionaries first entered Madagascar in 1820, and were greatly encouraged in their work by King Radàma, but when Queen Ranavalona I came to the throne in 1828, a severe persecution followed, and they were compelled to leave. Many native Christians were put to death, and Europeans generally were excluded from the island. But on the death of the queen in 1861 there was a complete change in the policy of the government, and since that time the people have made great progress in religion as also in all the arts of civilization. In 1877 all African slaves were freed, and considerable effort has been made to improve the military system and reduce the administration of law to a fixed and equitable system. In 1896 Madagascar, with Nossi-Bé and Ste. Marie Islands, was proclaimed a French colony, though a French resident-general had been received at the capital as far back as 1885. In February, 1897, the native queen was deposed by France and deported to Réunion and subsequently to Algiers. France now rules the island entirely, under a governor-general aided by an administrative council. Many parts of the island are known to be rich in mineral ores. The chief exports, besides gold, are rubber, rice, hemp and other fibers. The population is 3,054,658.

Like Australia, and for a similar reason—because by the sinking of the land it was cut off from the greater mass which we now know as Europe, Asia and Africa—Madagascar has developed animals, in many respects, peculiar to it. Some of the most interesting belong to the "night shift" (i. e., are nocturnal), including the monkeylike creature called the "aye aye" (because he goes about saying that), twenty-five kinds of bats and a weasel three feet long!

Madagascar has no poisonous snakes because poisonous varieties had not developed (*v.* EVOLUTION) when the island was separated from the continental mass; but it has boas (*q. v.*) of moderate size and the rivers are just full of crocodiles and fish with color patterns like the figures on a crazy quilt.

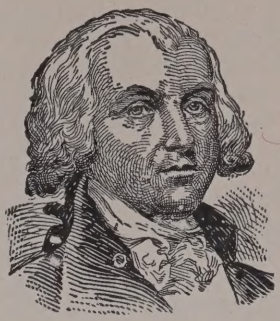
Madeira (*mȧ-dā′rȧ*), an island in the Atlantic belonging to Portugal, off the northwest coast of Africa, about 32 miles long and from 10 to 15 broad. The island (area 314 square miles) is of volcanic origin, and is occasionally visited by earthquakes. It is traversed by a mountain-chain running east and west; and the coasts are steep and rough, affording few harbors. Wine is the product for which Madeira has long been noted, several kinds of grapes being produced. There also is a considerable export of sugar. The inhabitants, estimated at 155,000 in number, are a mixture of Portuguese, Moors and negroes, and are described as a vigorous, industrious and peaceful race. The capital, Funchal (population 20,844), is the chief seaport and a noted health-resort. The Madeira islands, which the Romans had known as the Purple Islands, were rediscovered in 1346, if not earlier, and began to be colonized by the Portuguese in

1420; they were occupied by the British in 1801 and from 1807 to 1814.

Madei'ra, a river of South America and the largest tributary of the Amazon, is formed by the junction of the Mamore and Guapore in Bolivia, the Beni joining about 100 miles lower down. The river then flows northeast, its drainage-basin embracing nearly 500,000 square miles. From its mouth to its first falls the distance is nearly 600 miles, and above this point navigation is rendered impossible by a series of falls and cataracts extending over 200 miles. The length of the river, including its tributaries, is about 2,000 miles. See BOLIVIA.

Madison, the capital of Wisconsin, is located in Dane County, on an isthmus between Lakes Monona and Mendota, 80 miles west of Milwaukee and at the junction of several railroads. The capitol, university and other public buildings stand on hills, commanding extensive views of beautiful scenery. The university is in a 13-acre park, is open to both sexes and has a faculty of 470 members and 5,533 students. It has an income of over $100,000, arising from a state tax of ⅛ mill on the dollar. Washburn observatory, built in 1878–80, at a cost of $30,000, was given to it, with a full equipment, by Governor C. C. Washburn. Many summer visitors are attracted to this charming little city by its pure springs, bass-fishing, boating, beautiful drives and Chautauquan assemblies. It also has a large number of manufactories. Population, 51,000.

Madison, Dorothea Todd. In 1794 Congressman James Madison became engaged to Dorothea Todd, better known as "Dolly." As soon as she knew of it, Martha Washington told her, "Dolly, you pretty minx, make this bachelor better known and more popular." Dolly did. She did not have the learning of her husband, but she had beauty, tact, and kindness, and knew how to initiate him into the mysteries of society. When Madison became secretary of state in 1801, and since Mrs. Jefferson was dead, Dolly Madison was called upon to act as hostess at the president's state dinners. She was a social leader and instrumental in gaining for her husband many influential friends. These, coupled with Madison's genuine ability and integrity, and Jefferson's support, enabled him to be elected the fourth president.



JAMES MADISON

Madison, James, fourth president of the United States, his two terms extending from 1809 to 1817, was born at Port Conway, Va., March 16, 1751, and graduated at Princeton College in 1772. He was elected to the Continental Congress in 1780 and in 1784 to the legislature of Virginia, in which he was largely instrumental in securing the fullest religious liberty to the people. He also was one of the leading spirits in the convention of 1787, which framed the constitution of the United States; and in great measure it was due to his influence that the instrument was ratified by the legislature of Virginia. Madison was a member of Congress during Washington's administration; and, although he retired to private life when John Adams became president in 1797, he was the author of the Resolutions of 1798, adopted by the legislature of Virginia in opposition to the famous alien-and-sedition laws of the Adams administration. During Jefferson's administration (1801–9) Madison filled the office of secretary of state with such ability that he was chosen Jefferson's successor and inaugurated president, March 4, 1809. The principal feature of his administration was the War of 1812 between Great Britain and the United States, which was terminated by the treaty of Ghent, Dec. 14, 1814, although the battle of New Orleans was fought on the 8th of January following. On retiring from the presidency Madison took up his residence at Montpelier, Va., where he died on June 28, 1836.

Madonna (*mä-dŏn'-ä*), an Italian word meaning, literally, "my lady." It has come to designate specifically the Virgin Mary and pictures or statues representing her. The Madonna has been the favorite subject of both the Old Masters and modern painters as expressing the highest type of womanhood and motherhood. Michelangelo's group is the most famous of the statues and Raphael's "Sistine Madonna" the most famous of the paintings of the Virgin. Other works of the Old Masters include Holbein's "Meyer" Madonna; Sarto's "Madonna of the Sack"; Correggio's "Holy Night" and "Madonna of the Ladder"; Murillo's "Immaculate Conception" and his "Holy Family"; Titian's "Assumption"; Raphael's "Madonna of the Fish"; the "Holy Family" called "The Pearl"; "The Madonna of the Chair"; "The Madonna of the Grand Duke"; "La Belle Jardiniere"; "The Madonna of the Blue Diadem"; "The Blenheim Madonna"; his "The Madonna Foligno"; Da Vinci's "Virgin of the Rocks"; Fra Angelico's "Madonna of the Tabernacle"; Botticelli's "Madonna of the Louvre." Among the most striking of the modern works are "The Consoling Virgin" by Bougereau; "The Madonna of the Rose" by Dagnan-Bouveret; "The Madonna" by Ittenbach.

Madras (*mä-drăs'*), the capital of southern India (Madras Presidency), is on the coast of the Sea of Bengal, which washes the eastern coast of the presidency, about 225 miles north of Ceylon. It is the center of all the great military roads, is the terminus of two railway lines, and is connected with a system of canals. Nearly all the most important offices and the headquarters of every department are located here. The garrison is about 3,500 strong, of whom 1,200 are Europeans. Madras ranks third among the ports of India in the number and tonnage of vessels calling and in the value of imports and exports. The city dates from 1639. It is liable to be swept by furious hurricanes, which occur some years at the beginning of the monsoons in May and October. The present population is 518,660 about three-fourths of whom are Hindus. Over 50,000 are Mohammedans, 13,000 Eurasians and about 4,000 Europeans. Madras Presidency has an area of 141,726 square miles, with a population of 41,465,404. It comprises the eastern or Coromandel coast, a large part of the interior of the Deccan and part of the western or Malabar coast. Its mountain ranges are the eastern and western Ghâts, and it is watered by Godavari, Kistna and Kavari Rivers. Madras also forms one of the feudatory or native states, 9,969 square miles in extent, with a population of 4,811,841.

Madrid (*mȧ-drĭd'* or *mȧ-drēth'*), capital of Spain, is situated on the left bank of the Manzanares, 880 miles by rail from Paris. It is built on a treeless plateau 2,000 feet above the sea; and its sole recommendation as a capital would seem to be its central position in the peninsula. When Madrid was declared the capital by Philip II in 1561, it contained about 30,000 inhabitants. At the beginning of the 19th century the population numbered 160,000; in 1860 it was 298,000; and the last census gives 571,539. There is a university with 95 professors and 5,118 students. Madrid also is a province, with an area of 3,084 square miles and a population of 845,405.

Maelstrom (*māl'strŭm*), a famous whirlpool or, rather, current in the Arctic Ocean, between Mosken and Moskerra, two of the Lofoten Isles, on the northwestern coast of Norway. Vessels can pass through this strait at high tide and low tide, although in one place there always is a rough sea, the water being churned into angry foam. The stories of ships being swallowed are mere fables, although a ship fully under the power of the current might be dashed against the rocks on either side. The current takes 12 hours to complete a circular revolution.

Maeterlinck (*mĕ'tẽr-lĭnk*), **Maurice,** a Belgian poet, essayist and dramatist, was born at Ghent in 1862. He was educated for the law, and admitted to the bar in 1887. In 1896 he abandoned law for authorship, making his home in Paris. Maeterlinck is the chief name in the literary school which is known as Young Belgium. His dramas tend to be mystical and symbolic. They lean to the unreal and at times to the morbid. The philosophical essays of Maeterlinck are regarded as masterpieces in their style. His lyric verse, which includes the volumes, *Series Chaudes* and *Douze Chansons*, is imaginative rather than sweet. Several of his dramas are translated into English, *e. g.*, *The Blind*, *The Intruder*, *Princess Maleine* and *The Seven Princesses*. The chief volumes of Maeterlinck's essays are *Le Tresor des Humbles*, *La Lagesse et la Destinee* and *La Vie des Abeilles*. The dramas of Maeterlinck are better adapted for reading than the stage, although they inaugurated a new school,— that of the *Drame Intime*.

Mafia (*mȧ-fē'ȧ*), a Sicilian order or secret society, which gradually came to supplant the authority of the state by its own decrees, which are enforced even at the cost of life itself. Its organization does not appear to be of a very definite nature; but its power is undoubted and pervasive. It controls elections, affords protection against the officers of justice, and practically renders it impossible for those not members of its orders to secure employment in Sicily. Boycotting, its usual weapon, is supplemented by violence whenever occasion may seem to demand it. Nearly all crimes of violence which occur in any part of Italy are laid at its door, with how much truth in particular cases it is impossible to say. In the United States there is little doubt that it has its own secret agents, as murders in the Italian quarters of our American cities are seldom traced to their real perpetrators, and the guilty parties are but rarely brought to justice.

Magdalen Islands are situated in the lower St. Lawrence, lying farther south in the gulf than does Anticosti. They possess large deposits of gypsum.

Mag'dale'na, the principal river of Colombia, South America, rises in Ecuador, about 2° north latitude, only eight miles from the source of the Cauca. These streams flow northward, one on each side of the central Cordillera range, uniting about 100 miles from the Caribbean Sea, into which their waters are discharged. The Magdalena is navigable to Honda, 620 miles from its mouth, where the rapids begin; and above these it has been navigated to Neiva since 1875, a 20-mile railway alongside the rapids connecting the upper and lower portions of the stream. The length of the Magdalena is 1,050 miles, and the area of its drainage has been estimated at 92,000 square miles. Magdalena also is a province or department and the seat of silver-mines. It has an area of 20,460 square miles, with a population of 100,000; its capital is Santa Marta (population 6,000).

Magdeburg (*măg'de-bo͝org'*), the capital of Prussian Saxony and one of the chief fortresses of the German Empire, is situated on the Elbe, 90 miles from Berlin and 72 from Leipsic. Magdeburg was founded by Charlemagne in 805 and rebuilt by Editha, after its destruction by the Wends, in 924. During the Thirty Years' War it was besieged for 28 weeks by Wallenstein in vain; but two years later (1631) it was taken by Tilly and burned to the ground. Magdeburg is at the junction of five railways, and its river-trade is large. The city was taken by the French in 1806, but was restored to Prussia in 1814. It is the center of the German sugar-trade, and has many manufactures, with a notable cathedral, which dates from the 12th century. Population 279,685.

Magellan (*mȧ-jĕl'lan*), **Ferdinand,** a Portuguese navigator, was born at Oporto about 1480. After several years' service in the Portuguese navy he visited Spain, and laid before Charles V a scheme for reaching the Molucca or Spice Islands by sailing west, which was favorably acted upon by that emperor. Magellan sailed on Aug. 10, 1519, with five ships and about 250 men. Reaching the mouth of La Plata River and sailing along the coast of Patagonia, he passed through the strait that separates Tierra del Fuego from the mainland, and entered the vast ocean which he named the Pacific, on account of the smooth and tranquil waters he found. He continued his voyage until he reached the Philippine Islands, which he at once proceeded to take possession of in the name of the Spanish king; but in an encounter with the natives of the island of Mactan, who resisted his authority and his efforts to convert them to Christianity, he was killed on April 27, 1521. His only remaining ship, the *Victoria*, was brought back to Spain by Sebastian del Cano, who reached San Lucas on Sept. 6, 1522; and thus was completed the first voyage ever made around the globe. See *Life* by Towle.

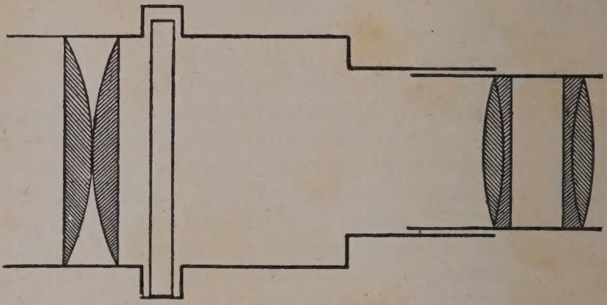
Magel'lan, the name of the strait separating South America from Tierra del Fuego and connecting the Atlantic and Pacific Oceans. It is over 300 miles in length, its breadth varying from 10 to 15 miles. This strait was discovered by Magellan, and has since borne his name. The chief harbor on the strait is Punta Arenas.

Magenta (*mȧ-jĕn'tȧ*), an Italian town, 16 miles west of Milan by rail. Here on June 4, 1859, occurred the terrible battle between the French and Sardinians on one side and the Austrians on the other, in which the Austrians were defeated with a loss of 10,000 killed and wounded, besides 7,000 prisoners. For his part in winning this victory Marshal McMahon was by Emperor Napoleon created duke of Magenta. Population about 8,000.

Maggiore (*mȧd-jō'rȧ*), **Lago,** one of the largest lakes in Italy, the northern portion extending into the Swiss canton of Ticino. It is about 40 miles in length, and its breadth varies from one to five miles. It is 600 feet above the sea, its greatest depth being about 2,000 feet. It has picturesque scenery; and on its banks are the Swiss towns of Locarno, Intra, Pallanza, Luino and Laveno.

Magi (*mā'jī*), the priestly caste among the ancient Persians. They not only were "keepers of the sacred things, the learned of the people, the philosophers and servants of God," but diviners of the future, augurs and astrologers. Zoroaster, in the course of his great religious reform, reorganized the Magi, subjected them to the most rigid discipline, and prescribed a mode of life suitable to their sacred office. For a long time their influence was almost without limit, but it afterward declined until they became mere jugglers and fortune-tellers, and gave the name magic to the tricks of conjurers and sorcerers.

Mag'ic Lantern, an optical instrument mostly used by lecturers for projecting upon an opaque screen an enlarged and brilliant image of a picture or object otherwise too small to be seen simultaneously by an audience. The ordinary magic lantern consists of the five essential parts indicated in Fig. 1: a source of light to illuminate the picture or object which is to be projected upon the screen; a lens which collects the light from this source and trains it upon the picture or object. This is called the condensing lens or, more briefly, the condenser; a slide, the picture or object to be shown to the audience; a lens which will produce a good image of the illuminated slide and is called the projection lens; and a screen or wall — generally opaque and very white — upon which the projection lens casts the image to be viewed by the audience.



MAGIC LANTERN

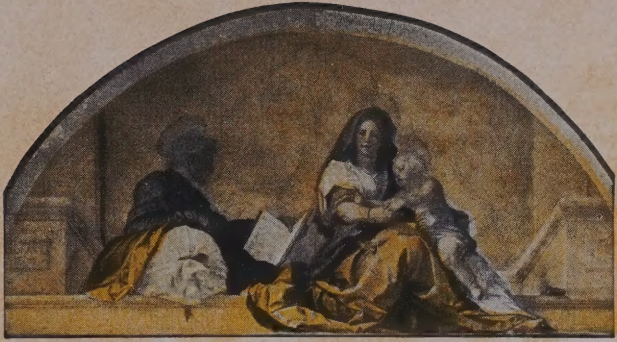
During the 17th and 18th centuries, this instrument was largely employed by magicians to produce curious effects for public entertainment. Hence the name of magic lantern, now largely replaced by the name of sciopticon or stereopticon.

The best source of light is the electric arc; but, when this is not available, the next best source is the lime-light. (See Drummond Light.) But the lime-light requires a cylinder of coal-gas and a cylinder of oxygen; and where these are not available an acetylene flame or an oil-lamp with two or three flames makes a very fair substitute. Incandescent electric lamps of high candle-power are now made for this special purpose.

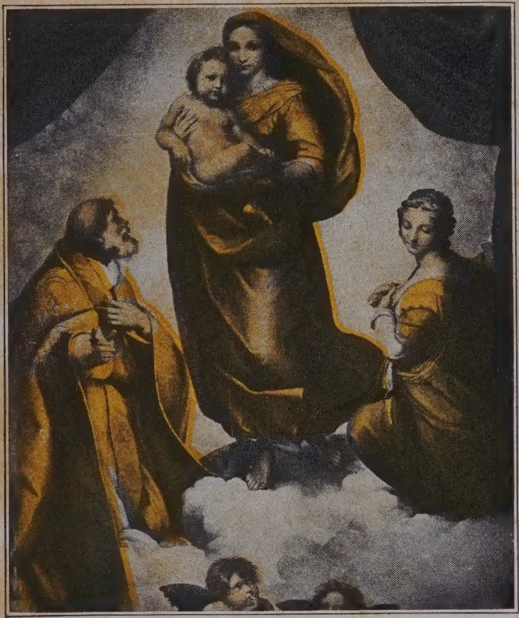
The condensing lens is usually made of two single plano-convex lenses with their spherical faces opposing each other. Since this lens is used only to throw light on the picture, not to produce an image, it need be only a low-grade lens. Passing now to the slide, it was the invention of photography that led to the use of the lantern as a means

The Madonna and Motherhood

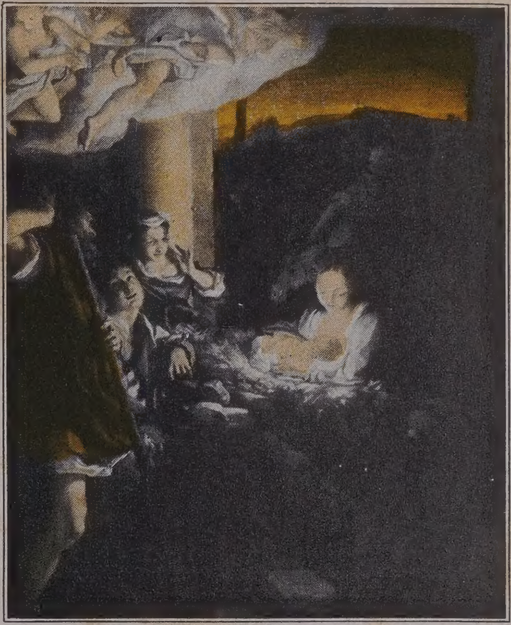
THIS page, devoted to Old Masters, also illustrates the development of art toward the style of the moderns as given on the next page.



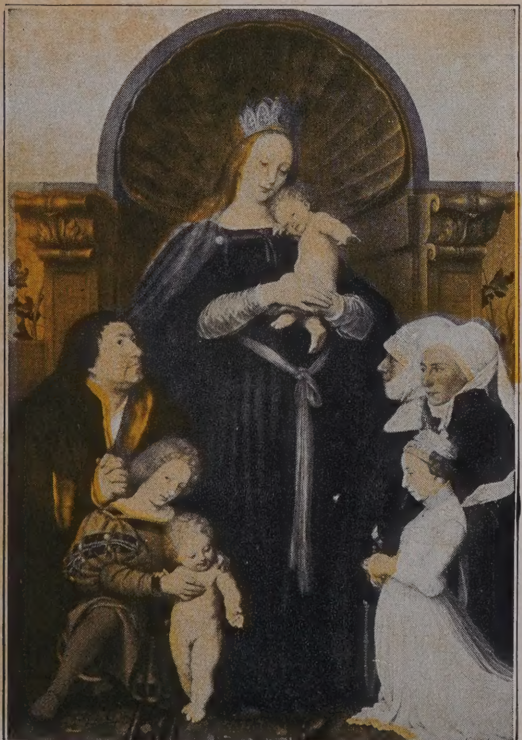
Church of the Annunziata, Florence
The Madonna of the Sack, by Del Sarto
(Italian b. 1487)



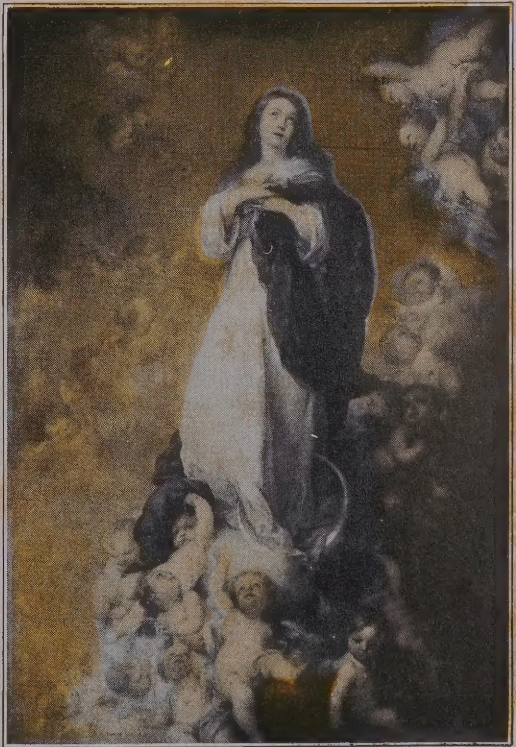
Royal Gallery, Dresden, Germany
The Sistine Madonna, by Raphael
(Italian b. 1483)



Royal Gallery, Dresden
The Holy Night, by Coreggio
(Italian b. 1495)



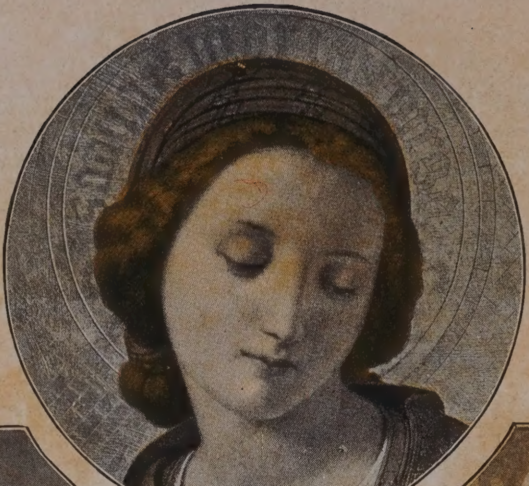
Darmsdadt Museum, Germany
The Meyer Madonna, by Hans Holbein the Younger
(German b. 1495)

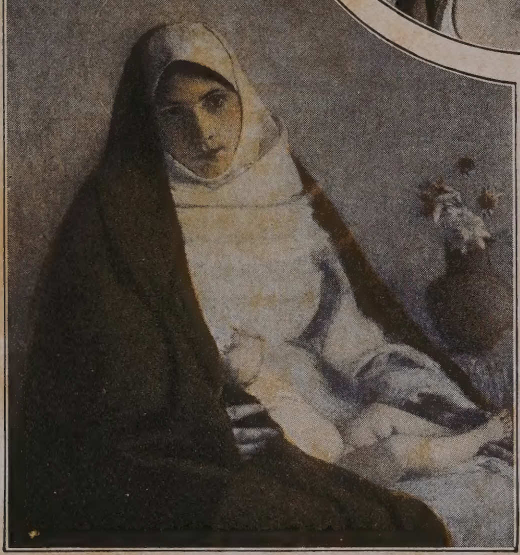


Louvre
The Immaculate Conception, by Murillo
(Spanish b. 1617)

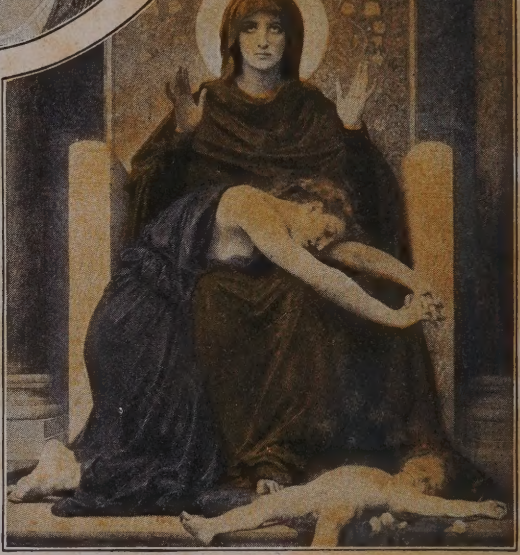
Motherhood in Art

THIS page shows how modern artists depict the Madonna and further emphasizes the idea of the divinity of all motherhood, bringing it down to everyday life in the painting of "Madame Le Brun and Her Daughter" and "Her Son," by Miss Walker. The head of the Virgin is by Franz Ittenbach (German b. 1813).

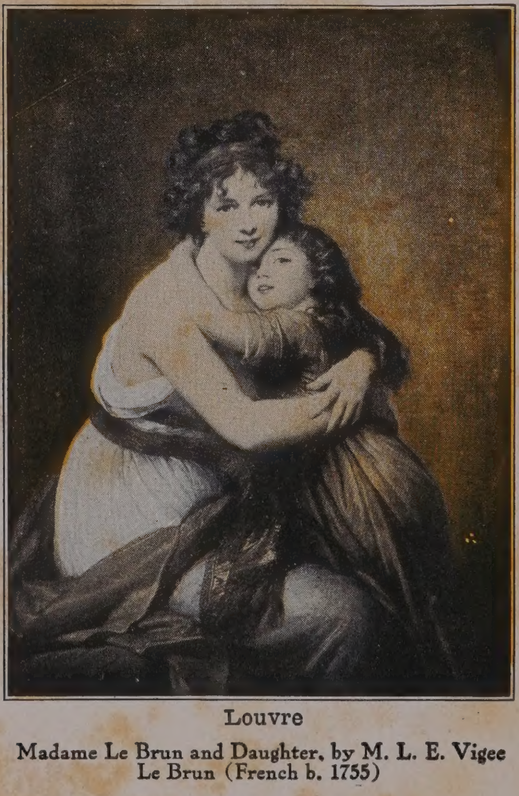




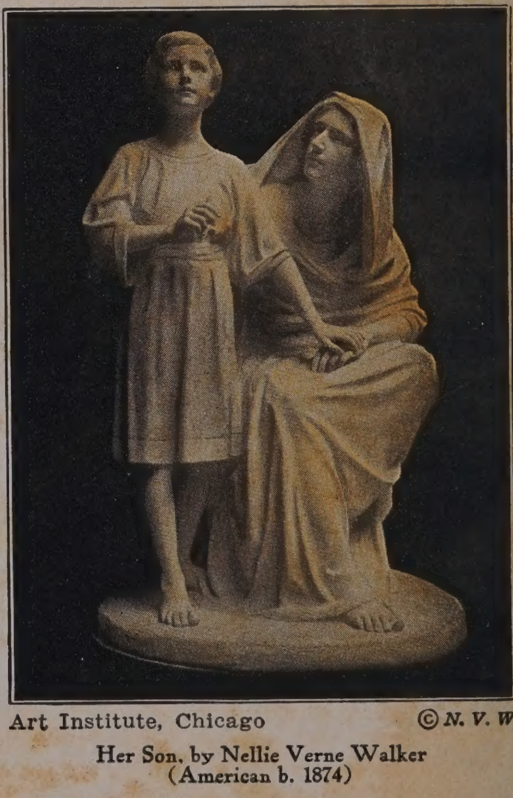
© *Horace K. Turner Art Co., Boston*
Metropolitan Museum, New York
Madonna of the Rose, by P. A. J. Dagnan-Bouveret (French b. 1852)



Luxembourg
The Consoling Virgin, by W. A. Bouguereau (French b. 1825)



Louvre
Madame Le Brun and Daughter, by M. L. E. Vigee Le Brun (French b. 1755)



Art Institute, Chicago ©*N. V. W.*
Her Son, by Nellie Verne Walker (American b. 1874)

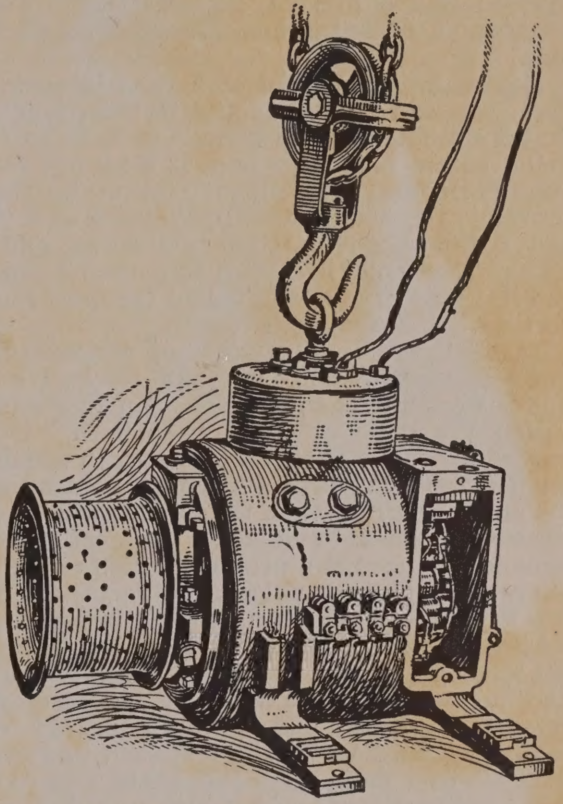
of instruction rather than of amusement. The picture on the slide should be so sharp as to bear magnifying and so clear as to give a brilliant image. The projection lens should be placed in such a position between the slide and screen that, when the slide is in one conjugate focus, the screen will lie in the other conjugate focus. It is necessary also that this lens be of a rather high grade — corrected both for chromatic and spherical aberration — since the definition of the image on the screen depends immediately upon this lens.

When the screen is viewed from the side on which the lantern is placed, it should be as white and smooth as possible. Since it acts as a diffusing screen, it is essential that no light should be lost by passing through the screen. It should, therefore, be filled with sizing or paint to make it opaque. See Wright's *Light.*

Magna Charta (*măg'nȧ kär'tȧ*), the great charter signed by King John of England at Runnymede, June 15, 1215, has ever since been regarded as the foundation of English liberty. Under the feudal system the tyranny and oppression of the Norman kings had become so great that, in the reign of King John, the English barons rose against him and compelled him to sign this charter. By its provisions a great many abuses connected with the feudal system were abolished. Justice was no longer to be sold or denied to the subject. Life, liberty and property were to be protected against the arbitrary will of the king, and no one was to forfeit either of these except by the law of the land. Fines imposed were to be in proportion to the offense, and even the humblest subject was not to be deprived of his lawful possessions. The great charter was renewed by John's successor, Henry III, in the ninth year of his reign and on five subsequent occasions before his death; and in 1300 it was finally confirmed by Edward I and his parliament.

Magne'sium, a widely distributed metallic element which is never found in the free state. It is present in many minerals, in carbonate of lime and magnesia, asbestos, meerschaum. It exists in mineral waters and in the sea as sulphate and as chloride. A sulphate is Epsom salts, which Drew extracted from the Epsom spring in 1695. The metal was first discovered by Davy. For a long time manufacture was on a small scale; but now it is made in large quantities. Chlorides of potassium and magnesium and fluorspar, with metallic sodium added, are fused together. The crude metal is finally distilled and pressed in a semifluid state into ribbon or wire. The metal is also prepared by passing an electric current through a fused mixture of salts instead of using metallic sodium. It has a silver-white color, which is tarnished by moist air. It is very light, readily volatile, and, when lighted, burns in air with an intensely brilliant light rich in chemical rays. On this account it was much used in photography until the electric light took its place. The medicine calcined magnesia is the oxide of magnesium, the same substance as that formed when magnesium is burnt.

Mag'netism. It has been known for many centuries that an iron ore which mineralogists call *loadstone* or *magnetite* has the remarkable property of attracting iron filings. A body which possesses this property is said to be *magnetized*, and is called a *magnet.* Certain parts of a magnetized body attract iron-filings more strongly than do others. These parts are called *magnetic poles.* A piece of iron can be magnetized by rubbing it over a piece of lodestone; and if the iron have a long, slender shape it will ordinarily have only *two* poles. The first important discovery in magnetism was made some time near the 12th century of the Christian era, when it was found that if a piece of magnetized iron be freely suspended it always sets itself so that a certain direction in it makes a fixed angle with the geographical meridian, *i. e.*, with the north-and-south line. This is the fundamental principle of the ordinary mariner's compass.



MAGNET LIFTING GENERATOR WEIGHING 800 POUNDS

The direction in which the freely-suspended compass-needle points, at any place, is called the *magnetic meridian* at that place. The angle between the magnetic and geographical meridians is called the *magnetic declination.*

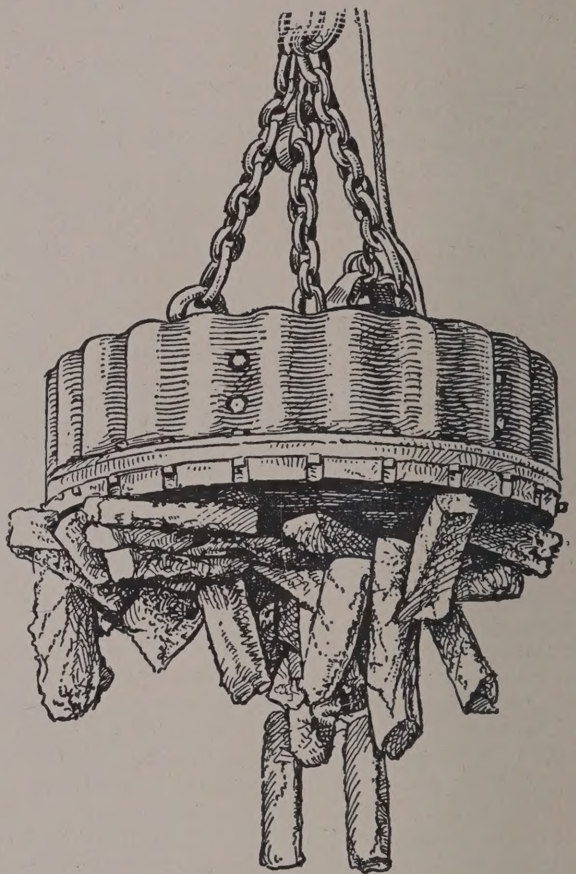
Before the time of Columbus' first voyage to America, it was thought that the magnetic declination was a constant quantity. But on the voyage mentioned Columbus found that the declination varies from one point to another on the earth's surface. This was a discovery of the utmost importance to navigators. It might be called the second important discovery in magnetism. [In 1436 Andrea Bianco had marked this magnetic declination for different parts of the ocean on his atlas. What Columbus really discovered was a line of no variation. See COLUMBUS, COMPASS and Humboldt's *Cosmos*.]

Hartmann, who lived at a time intermediate between Columbus and Galileo, found that if a needle be so suspended as to lie *horizontal* before magnetization, it does not remain horizontal after magnetization; on the contrary, the north end "dips" down as if it had become heavier than the south end. This phenomenon is known as *magnetic dip;* and its discovery may be called the *third* important one in magnetism.

The first profound student of magnetism was Dr. William Gilbert (1540–1603), who was the leading man of science in England during the reign of Queen Elizabeth. He was led to conclude from the manner in which small magnets behave at various points on the earth's surface that the earth itself is a gigantic magnet. But how the earth became magnetized is a problem which no one has yet been able to explain. Gilbert showed also that when an iron magnet is heated to red heat, it not only ceases to be magnetized, but loses all ability to become magnetized. Red-hot iron behaves, therefore, not as cold unmagnetized iron, but as cold brass or glass or zinc. This discovery is described by saying that iron loses magnetic quality at red heat. Gilbert also made it highly probable, by his experiments on broken magnets and on heated magnets, that magnetism is a molecular phenomenon, a prime discovery which all subsequent experiments have confirmed.

If, to the phenomena already described, we add that of *magnetic induction*, we shall have a fairly complete summary of the fundamental facts of magnetism. A piece of unmagnetized iron, when brought near a magnet, immediately acquires magnetic poles, *i. e.*, it exhibits magnetization as well as magnetic quality. A wire nail held near a strong magnet not only is attracted itself, but will attract other iron nails or iron filings. These wire nails are said to be magnetized by *induction*. The most useful and most interesting case of induction met with in modern science is that of the *electromagnet*. Here an electric current is made to flow through a coil of wire in which is placed an iron core. This combination is called an *electromagnet*, and is a fundamental part of the dynamo, motor, telephone and telegraph instrument.

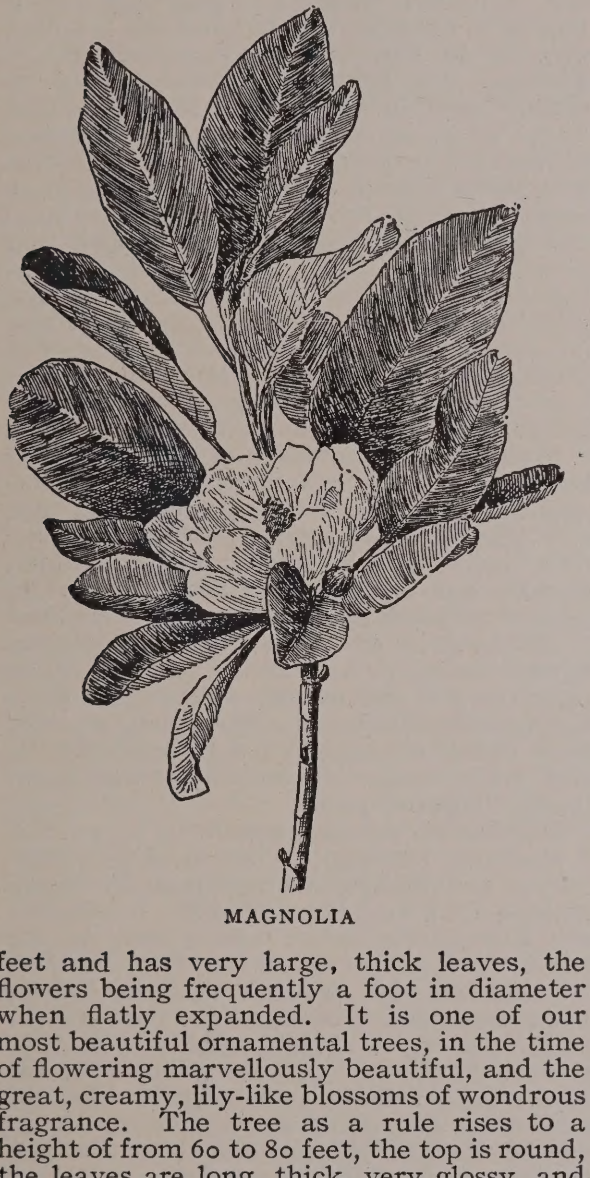
The lifting power of the electromagnet is now used effectively in modern structural iron and boiler shops, foundries, shipyards and machine shops, and a great saving of labor is thus accomplished. Go into one of these great establishments, and you may see an electromagnet hooked to the end of a hoisting-chain carried by a crane. Suddenly it will be let down into contact with a pile of pig iron and ascend with a dozen iron pigs hanging to it. The crane moves along the overhead runway to the furnace platform, when the current is switched off and the pigs are dropped on the platform. At a trial made a steel gondola-car containing 109,000 pounds of pig iron was unloaded in two hours and five minutes, one man, the crane operator, doing the work. Scrap iron, which is difficult and tedious to handle by hand, is easily and rapidly picked up or unloaded from cars and placed where wanted. A safe weighing seven or eight tons is picked up and with a crane carried from one shop to another. In a hundred similar ways the electromagnet is made to accomplish feats which seem little less than marvelous, and the result is large economy of labor.



MAGNET LIFTING PIG-IRON

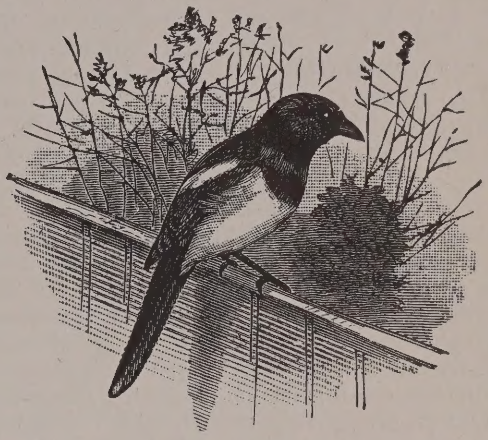
Faraday made one of the great advances of modern times when he introduced into the study of magnetism the method of lines of force and the idea of the magnetic field. For these and other more advanced considerations see Ewing's *Magnetization of Iron and Other Metals*, which undoubtedly is the best treatise on the subject in the English language. HENRY CREW.

Magno'lia, a genus of highly ornamental trees or shrubs, containing about 20 species, which are native to North America and eastern Asia. The finest of the American species, the one most largely cultivated in the south, is *M. grandiflora* or bull-bay, which is native from South Carolina to Louisiana. In its wild state it reaches a height of 100 feet and has very large, thick leaves, the flowers being frequently a foot in diameter when flatly expanded. It is one of our most beautiful ornamental trees, in the time of flowering marvellously beautiful, and the great, creamy, lily-like blossoms of wondrous fragrance. The tree as a rule rises to a height of from 60 to 80 feet, the top is round, the leaves are long, thick, very glossy, and are evergreen. The bark is brownish-gray. The wood, which is strong, is used chiefly for fuel. It is a familiar tree of southern garden and street, grows wild in river swamps and barrens, is seen at its best in the forests of western Louisiana. The other native magnolia in common cultivation is *M. glauca* or sweet bay. In the north it is but a shrub, but in the south is a tall tree. It is found from eastern Massachusetts down to Florida and west to Texas. It is slender in form, its oval leaves are thick and glossy. The blossoms are creamy-white and fragrant, in shape not unlike the yellow pond-lily.



MAGNOLIA

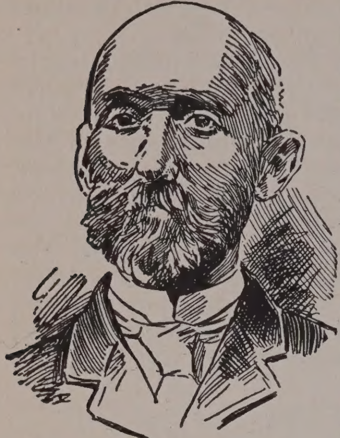
Mag'pie, a bird of the crow family, closely related to the jays but distinguished by having a much longer and graduated tail. The true magpies are mostly inhabitants of the Old World. The American form is a variety of the European species, and occurs in the northwest from Alaska and the border of the Arctic barrens to the arid regions of the southwest. It is about 16 or 18 inches long, its extremely long tail giving it a striking appearance in flight. Its plumage is of glossiest black and snow white, a most effective combination. If offered encouragement and treated generously, it makes friends with ranchman and cabin-dweller, is easily tamed, and can be taught to articulate a few words. Its note is harsh, and it keeps up a continual chattering when disturbed. Its food mainly is snails, worms, frogs, rats etc. Its nest is protected by rough thorns. Magpies are noted for thievishness; they have a propensity to carry away and conceal bright articles, and therefore often steal jewelry. A great amount of popular superstition attaches to them; they were long regarded as birds of evil omen, associated with witchcraft and the black art.



MAGPIE

Magruder (*mȧ-grōō'dẽr*), **John B.,** an American soldier, was born on Aug. 15, 1810, at Winchester, Va. He graduated from West Point in 1830. He served throughout the invasion of Mexico under General Pillow, as the commanding officer of a battery. He remained in the regular army until the breaking out of the Civil War, when he entered the Confederate army, in which he became a major-general. At the close of the war he retired to Mexico, where he accepted a commission as major-general in the army of Maximillian. Upon the collapse of the attempted empire he returned to Texas, lecturing in various southern cities. He died at Houston, Tex., Feb. 19, 1871.

Mag'yars. See HUNGARY.



CAPTAIN MAHAN

Mahan (*mȧ-hăn′*), **Alfred Thayer,** a naval officer, was born on Sept. 27, 1840, at West Point, where his father was a distinguished instructor in military engineering. He graduated from the United States Naval Academy in 1859 and served throughout the Civil War, chiefly in the South Atlantic and Gulf squadrons. He was head of the department of gunnery in the Naval Academy from 1877 to 1880 and president of the United States Naval War College, Newport, R. I., 1886–89. After various distinguished services in connection with naval commissions and educational institutions, he was appointed to the command of the United States cruiser, *Chicago*, and attached to the European squadron on May 11, 1893. He soon became widely known for important works upon the history and philosophy of naval warfare and was exceedingly popular abroad, Cambridge conferring the honorary degree of LL.D. and Oxford that of D. C. L. His writings embrace *The Gulf and Inland Waters*, *The Navy in the Civil War*, *The Influence of Sea-Power upon History*, *The Life of Admiral Farragut*, *The Interest of the United States in Sea-Power* and various other works, including a *Life of Lord Nelson.* Captain Mahan retired from active service in 1896, but was made a member of the Naval Advisory Board during the war with Spain and was a delegate to the Hague peace-conference (1899). He died Dec. 1, 1914.

Mahanoy (*mä′hȧ-noi′*) **City, Pa.,** borough in Schuylkill County, on Mahanoy Creek, about 55 miles northeast of Harrisburg. In the vicinity are fireclay, building-stone and anthracite. Its 20 collieries are operated by residents of the city. It manufactures pottery, flour, hosiery, lumber and foundry products. It has admirable public and parochial schools and several fine churches. The city was settled in 1859, incorporated in 1863, and has the service of two railroads. Population 15,936.

Mahdi (*mä′dē*), the Mohammedan restorer of all things. He is not mentioned in the Koran, but is said to have been promised by Mohammed to complete his work — to fill the world with righteousness. The Mahdi is a Mohammedan messiah. In Mohammedan history, at different times, men of ambition have arisen who have set up claims to being the Mahdi. Hence the claim figures in war and strife between rival tribes and nations. In 1799 a Mahdi arose in Egypt against the French. In 1883 one assumed the title and led a revolt against the khedive. He seized El-Obeid, the chief city of Kordofan, and made it his capital; and on the 5th of November the Egyptian army of Hicks Pasha was annihilated. In 1885 Khartum was taken, and General Gordon, whom England sent to pacify the Sudan, was killed. This Mahdi died at Omdurman on the 25th of June, 1885.

Mahog′any, the wood of *Swietenia mahogani*, which belongs to the family *Meliaceæ.* The tree becomes 70 feet high, and is native to Central America and the Antilles, growing in Peru, on the Bahamas and in Florida. Its beautiful dark-red wood is chiefly used in veneering. It is esteemed above all woods in cabinet-work, and is employed for interior finish. In Florida the tree grows from 40 to 50 feet high; the bark is scaly and red-brown; the wood, very hard and close-grained, is a rich red-brown that grows darker with age. The species of *Cercocarpus*, a genus of the rose family, is also popularly called mountain mahogany. There are four known species, which are found in the Rocky Mountains from Montana to Mexico. The name is suggested by the very heavy and cross-grained wood.

Mah-Jongg, adaptation of a Chinese game by J. P. Babcock, who originated the game-name, added arabic numerals to playing tiles, etc. There are 144 playing pieces; designs are dots, bamboos, characters, dragons, winds, (flowers and seasons sometimes added). In general the game is to match and discard hand to obtain series of three consecutive numbers in each design, a chow, or three or four of the same number and design, a pung. The game had a rapid rise to popularity and sets imported from China, elaborately hand carved and inlaid with various colored wood and bone, brought fabulous prices.

Mahom′et. See MOHAMMED.

Mahone (*mȧ-hōn*), **William,** Confederate soldier and Federal senator, born in Southampton Co., Va., Dec. 1, 1826. He entered the Confederate army, taking part in the capture of Norfolk Navy-Yard, April 21, 1861. He engaged in desperate fighting about Petersburg, and was called the hero of the crater because of his bravery at the time General Grant exploded the mine under the earthwork popularly known by the Federal soldiers as Fort Hell, on July 30, 1864. He rose to the rank of major-general in the Confederate army. He entered politics and was elected to the United States senate in 1880, where, while nominally an independent, he usually voted with the Republicans. He died Oct. 8, 1895.

Mahrattas (*mȧ-răt′tȧz*), a people of mixed origin, who formed a famed and historic confederacy, Hindus in religion and caste-laws, inhabiting western and central India. Their founder was Sivaji, a freebooter. He compelled several independent

Hindu chiefs to acknowledge him as their leader and with them overran and subdued a large portion of the territory of the emperor of Delhi. Under the fourth sovereign's reign there were five Mahratta states. In 1761 the Mahrattas suffered a frightful defeat at the hands of the ruler of Afghanistan. They lost 50,000 men in this conflict. After many long and bloody contests with the British and their allies (1780, 1803, 1817-18), with the exception of Sindia, they were reduced to dependence. Sindia's power was broken in 1843. The son of the last reigning rajah, who became a British prisoner in the neighborhood of Cawnpore, was the infamous Nana Sahib, whose connection with the mutiny in 1857 is historic. See INDIA.

Main (*mān* or Ger *mīn*), a river of Germany, the largest affluent the Rhine receives from the right, is formed by the junction of the White and the Red Main, four miles below Kulmbach, in northeastern Bavaria. It mingles its yellow waters with the green current of the Rhine opposite Mainz (Mayence), after a zigzag course of 307 miles, the last 205 of which are navigable. Its waters are joined to the Danube by a canal. The Main divides northern from southern Germany. Frankfort is one of the chief cities on its banks.

Maine (*mān*) is the largest of the New England group of states and the most northeasterly State of the Union. It has always been noted for its rugged and scenic beauty, particularly for its rocky rivers, clear lakes and its broken coast line edged with countless wooded islands. The area of Maine is 33,040 square miles, 3,145 square miles of which are covered by rivers and lakes. It is bounded on the northwest by Quebec, Canada; on the northeast by New Brunswick, Canada; on the southeast by the Atlantic Ocean, and on the west by New Hampshire. Its popularity is ever increasing as a haven spot for summer resorts including the many sports of the season, as well as a playground for fishing and hunting.

Surface. The State is divided by a slope running gently in a northeasterly direction. The northern end of the Appalachian Mountains crosses the southern slope bringing the highest points of the State into this section. In the center of the State is found the highest point, Mt. Katahdin, 5,268 feet, with lesser peaks stretching to the southwest. Saddle-back, 4,000 feet; Mt. Abraham, 3,388 feet; Mt. Bigelow, 3,600 feet, and Mt. Blue, 3,200 feet, are the other outstanding high points of elevation. Most of this mountainous country is rounded and heavily wooded with connifer trees which have given it its sobriquet, the "Pine Tree State." The northern slope descends gently to the northeast and is less hilly and rugged. The topography of the State is particularly interesting because at one time it was covered by the great continental glacier. When this melted, many river basins were dammed, the drainage of the State shifting so that many lakes were formed and rocks were strewn throughout the valleys and slopes. There are more than 2,400 lakes and over twice as many rivers in Maine brought into existence by the ice sheet of the glacial age. The 1,300 heavily wooded islands were formed at the same time.

Climate. Maine has a very cool climate the year round, the average temperature being forty-two degrees. It lies directly between the north pole and the equator, having the forty-fifth parallel running across the center of the State. However, the Arctic currents reach as far south as Maine, giving it a colder mean temperature than other states of the Union in the same latitude. The summers of only four and a half months duration are delightfully cool attracting many visitors from the states along the Atlantic coast which suffer with heat. The winters are severe and long with heavy snow fall. The average yearly precipitation is approximately forty inches with forty-four per cent of it in snow, with as much as 110 inches falling in the northern and western sections of the State. The prevailing northeast wind of the summer produces moisture in the form of fog.

Minerals. The chief minerals of the State are lime, feldspar, granite, stone, slate and clay products. Stone quarries are found in every county throughout the State producing an excellent quality of stone. A high grade granite is quarried in Maine, the quality of which is surpassed only by that quarried in Vermont and Massachusetts. Lime is found more abundantly in the southeastern part of the State, and a wide strip of slate is found from the Kennebec River to the eastern border. Maine ranks first among the states in the production of feldspar.

Production and Industry. In spite of the rocky and rugged Contour of the State, agriculture plays an important rôle in Maine. In 1930 there were 39,066 farms with a total acreage of 4,639,938. Of this total acreage, 1,402,000 acres were devoted to crops. The value of the farms and buildings was estimated at $194,280,000. The valley of the Aroostook River is the largest area of arable soil, composed of rich yellow loam, which is very productive in the growth of cereals and garden vegetables. Potatoes are the outstanding crop and the production doubles the combined amount of other crops, such as oats, hay, wheat, buckwheat and corn. In 1932, there were 39,480,000 bushels produced from 168,000 acres. Much of the farm land is meadow and excellent for pasturage—stock raising and dairying being important industries.

Seventy per cent of the State is still covered with forests comprised mostly of fir, pine, spruce, hemlock, oak, birch, and maple. Basswood, linden, ash and beech are found in lesser numbers. Maine appropriates a large amount annually for the care and protection of its forests. The virgin pine has been felled, but the new growth is steadily and rapidly becoming very valuable.

Since the opening of the nineteenth century, the development and use of water power has been ever increasing, the rivers in Maine being particularly swift and adaptable for industrial uses. The developed horse power in 1933, amounted to 613,214, with an additional 1,074,000 available horse power to be further developed.

Fisheries have always been a leading industry since the early history of the State. Big catches of lobster, clam, sardines, herring, cod, haddock, salmon and mackerel are made along the coast. There are large canneries for preserving the tons of fish which are brought in.

The making of paper is one of the principal industries of the State. Spruce from the forest is used for wood pulp. About 650,000,000 feet of lumber are cut annually from the various types of wood. Much cotton and woolen goods are manufactured in the mills. Maine is the leading State in the Union in the construction of wooden ships. The manufacture of boots and shoes form another important industry in the State.

Transportation. The Maine Central railroad is the leading system in Maine covering all but one of its counties. The Boston and Maine; Bangor and Aroostook; and the Grand Trunk are the other leading roads. The Canadian Pacific links the Canadian and American railroads in the State of Maine. There are 2,192 miles of steam roads in Maine, and 501 miles of electric roads. The State has improved and graded 2,041 miles of its highways, 1,933 miles of which are paved.

Population. According to the census of 1930 Maine has a total population of 797,423, 97.3 per cent of whom are white and 87.1 per cent native born white. The urban population consisted of 40.3 per cent, the tendency increasing from rural communities is shown in comparing census reports of 1930 and 1920. The largest city is Portland which in 1930 had 70,810 inhabitants. Other important cities are: Lewiston, 34,948; Bangor, 28,749; Auburn, 18,577; Augusta, 17,198, and South Portland, 13,840.

Roman Catholics form the largest religious organization. Baptist, Methodist and Episcopal churches follow in diminishing numbers. The entire church enrollment includes 294,092 members from 1,447 churches in the State.

Education. The history of education in Maine dates back to 1800 when it was still a part of Massachusetts. Compulsory elementary schools for those from ages of five to twenty-one are enforced, with compulsory education up to the age of fourteen. In 1846 a State Board of Education was created and under its supervision are the six normal schools and the State University at Orono. There were 4,887 elementary schools, 227 high schools and fifty-three academies in the school year 1930-31, with a total expenditure of $11,783,805. The University of Maine was organized in 1868, and Bowdoin the next largest and best known educational institution, is at Brunswick, founded in 1794. Other colleges of considerable size are Bates College at Lewiston and Colby College at Waterville. The University of Maine is endowed as well as receiving large funds from the State and had an enrollment of 1,682 students in 1932. State Normal schools are maintained at Farmington, Castine, Gorham, Louiston, Presque Isle, Machias and Fort Kamp.

Government. The seat of government is the capital of Augusta. Biennially the Governor, thirty-one Senators and 151 Representatives are elected to serve the State. In 1931 by a referendum vote the administration of the State was entirely revised, eliminating overlapping and old agencies and creating a new council of seven men to be appointed by the Governor for three-year terms. This body carries on the work of the newly created departments of Audit, Finance, Health and Welfare, Education and Fisheries.

The vote is granted to all citizens of the State over twenty-one years of age, who can write their names and read English. The State is represented in the National Congress by two Senators and three Representatives.

History. It is more than a tradition that the Northmen visited the coast of Maine. Some Historians state that Thorwald led the Norsemen along these shores in the eleventh century. Authentic history establishes the fact that the Cabots, sent out by England in 1847-8, crossed the Gulf of Maine during their first voyages. Giovanni da Verrazzano sailed along the coast in 1524, and was so pleased with the grandeur and beauty of the region now known as New England that he called it New France. The coast was visited and explored by Gomez in 1525; by Rut, an Englishman in 1527; by André Thevet, a French Roman Catholic priest, in 1556; by Martin Pring, sent out by England in 1603; and in the same year by Sieur De Monts, who took possession of the land in the name of France. In 1605 George Weymouth landed at the island known as Monhegan, and took possession of the country in the name of James I of England. In 1607 Captain Raleigh Gilbert landed at what is now Pemaquid and made a settlement at Phippsburg, which had a brief existence. The second colony established by the English was founded in 1616 near Biddeford, and numerous settlements along the York and Kennebec Rivers were made. In 1615 Captain John Smith visited the shores of Maine and published a brief description and map of the country and named it New England. In 1650 the territory was under six governments and the colonists being weary of the strife fostered by these unnatural conditions called on Massachusetts for aid and finally came under its control. The population steadily increased having 12,000 inhabitants in 1742 and 96,540 by 1790. The inhabitants asked for separation from Massachusetts in 1785, but it was not until 1819 that the request was granted. Maine was admitted to the Union the following year with practically its present boundary lines. It was the first State to pass a prohibitory law against liquor.

Maine, Sir Henry James Sumner, a celebrated British jurist and historian, was born on August 15, 1822, at Kelso. At the age of twenty-five he was appointed professor of civil law at Cambridge University. In 1862 he went to India as law-member of the council in India, an office that had been held by Macaulay. In 1877 he was elected Whewell professor of international law at Cambridge. Maine introduced wise reforms into Indian law, but his work on the origin and growth of legal and social institutions is largely responsible for his fame. His publications include *Ancient Law; Village Communities; Early History of Institutions; Popular Government; International Law,* and *Dissertations on Early Law and Custom.* He died at Cannes, Frances, on February 3, 1888.

Maintenon, de (*dē̃ măn-t'nôn'*), **Francoise D'Aubigne,** Marquise, consort of Louis XIV, was born in prison at Niort, France, on November 27, 1635. She was reared in the West Indies, but returned to France in 1645. When she found herself at the age of fifteen reduced to poverty by the death of her parents, Scarron the poet offered to marry her or to pay her entrance fee to a convent. He was lame and deformed, but she chose to marry him, and for nine years was the center of the intellectual society of his house. At his death his pension was continued to her, and in 1669 she was appointed governess of two of the sons of Louis XIV. She bought the estate of Maintenon in 1674, and gained power over Louis, who made her second lady-in-waiting to the Dauphiness in 1680. After the death of the queen in 1683 she was privately married to Louis XIV in 1685. Her influence over him was very great, and on the side of morality. She was a liberal patroness of literature and art. She founded at St. Cyr, near Versailles, a home for poor girls of good family, in memory of her own youth, and retired to it on the death of the king in 1715. She died on April 15, 1719. Her *Mémoires* are spurious, but the *Lettres,* published in 1756, are genuine.

Mainz (*mīnts*). See MAYENCE.

Maize. See CORN.

Majolica (*mȧ-jŏl'ĭ-kȧ*), a kind of pottery. The genuine majolica of the collectors is the beautiful lustred tableware with raised enamel decorations, first brought into Italy from Moorish potters of western Spain by way of Majorca, and later made in the island of Majorca and in Italy, especially in the fifteenth and sixteenth century. It is an earthenware made of a coarse clay paste covered by hand with raised decorative enamel in intense, attractive colors. The most noted artists made designs for majolica, which were executed as faithfully as sculpture. So many of Raphael's famed paintings were copied on majolica that it is sometimes called Raphael, or Raffaelle ware. Modern majolica is chiefly made into vases and pitchers. It is considered the most beautiful decorated pottery ever widely made in the Christian era.

Majorca (*mȧ-jôr'kȧ*) or **Mallorca,** the largest of the Balearic Isles, is situated about 100 miles from the Spanish coast, and 150 miles north of Algiers. It is sixty miles long, forty miles wide, and covers an area of 1,310 square miles. In the north are mountains 3,500 to 5,000 feet in height. Olive-groves abound everywhere, and almond, orange, fig and other fruit-trees are common. A London company in 1871 drained 5,000 acres of marsh-lands, which are of extraordinary fertility. Majolica ware is still made here to a small extent. Majorca, with Minorca and Ivica, all lying in the Mediterranean off the coast of Valencia, forms a province of Spain, called Baleáres or the Balearic Isles. The chief town and capital is Palma on the southwestern coast, which has a population of 89,346, according to the census of 1931.

See BALEARIC ISLES.

Malacca (*mȧ-lăk'ȧ*) **Strait of,** a waterway or sea-passage which separates the Malay peninsula from Sumatra, and forms the channel between the Indian Ocean and the Chinese Sea. It is 550 miles in length and from thirty to 185 miles broad. There are a number of islands in its narrow end, on one of which is the British settlement of Singapore.

Malaga (*mäl'ä-gä*), a seaport in the southern part of Spain, and capital of the province of the same name, is situated on the Mediterranean sixty-five miles northeast of Gibraltar. It has a wonderfully equable and uniform climate due to the shelter of the mountains on the north and east. It is dry and sunny. Malaga is one of the most important seaports of Spain, yet its trade has been declining since 1878. Diseases have ravaged the vines, the orange and the lemon groves. The United States, its great customer for Malaga raisins, now uses California raisins. Manufactures include cotton and linen goods, pottery, machinery, flour and soap. The town was founded by the Phoenicians and later became a Carthaginian colony. A Moorish castle is one of its few noted buildings. Ferdinand and Isabella captured it from the Moors in 1487. The French sacked Malaga in 1810. The estimated population of the city in 1931 was 191,611; of the province, 619,045.

Malay (*mȧ-lā'*), the race found in the Eastern archipelago and the neighboring peninsula, which are named from the Malay Archipelago and the Malay Peninsula. They belong to the Mongols and usually are short in stature, being not much over five feet in height, with yellow skin, straight black hair, almond-shaped eyes and flat features, closely resembling the Chinese. Their language, however, is entirely different from that of the Asiatic Mongols, belonging to the great Polynesian family, which extends across the Indian and Pacific Oceans. Since the thirteenth century the Malays have been the traders of the archipelago, and of late years have given up their roving habits and are occupied with trade and agriculture. Their language is simple in structure, and soft and harmonious. It is written in the Arabic character, although the Roman system was later adopted.

Malaya (*mȧ-lā′ȧ*), or the **Straits Settlement,** is a Crown Colony of Great Britain, comprising several islands and a strip of the Malay Peninsula. Its total area extends over 1,600 square miles, distributed as follows: Singapore Island, 225 square miles; Penang Island, 111 square miles; Province Wellesley, 282 square miles; Malacca, 637 square miles; Pangkor and a bit of mainland, known as the Dindings, and Christmas Island, Labuan and the Cocos Islands, 345 square miles. Singapore Island, twenty-seven miles long and fourteen miles wide, is situated at the funnel point of the Strait of Malacca, and separated from the southernmost point of Asia only by a half mile of water, over which the Jahore Causeway now forms a connection, giving through rail service from Bangkok to Singapore. Penang is an island off the west coast of the Malay Peninsula, at the northern entrance of the Strait of Malacca. On the opposite shore of the mainland is Province Wellesley stretching in an eight mile strip for forty-five miles along the coast. Just off the coast of Perah is Pangkor Island which, with a small strip of mainland, is known as the Dindings. Malacca is situated on the western coast of the peninsula between Singapore and Penang, a strip forty-two miles long and from eight to twenty-five miles wide. The Cocos or Keeling Islands are a group of about twenty small coral islands, situated about 1,161 miles southwest of Singapore. Christmas Island lies in the Indian Ocean, 529 miles northeast of the Cocos Islands. Labuan is an island located about six miles off the northwest coast of Borneo.

A hundred years ago Singapore Island was a deserted jungle owned by the Sultan of Johore, and boasting a single tiny fishing village. It was purchased in 1819 for a small fee for the East India company and in two years had become a trading center with a population of 10,000. Singapore has been developed as a free port and now carries on trade with an annual value of $1,000,000,000 and ships 29,000,000 tons yearly. The British House of Commons voted in 1923 to make it an impregnable naval base. It occupies a strategic position and is heavily fortified. In 1928 the contract for the construction of a new naval dockyard and base at a cost of about £7,750,000 was procured. It occupies a site of 3,000 acres, granted by the local government. Plans were also developed for a 600 acre airport. The Straits Settlement trade is usually included with that of the Malay States. Rubber, cocoanuts, palm oil and rice are important products. In 1931 there were 434,857 tons of rubber exported. Dried and salted fish, pineapples, rattans, sago, pepper and copra are also exported. There is but little manufacturing carried on. In 1931 there were 1,072 miles of single track railway. At the end of 1929 there were 1,049 miles of highway. Singapore has excellent cable, telephone, telegraph and mail connections. Most of the islands have wireless connections.

Vernacular instruction in the Malay language is free and compulsory for Malays in the Settlement. English is taught in non-sectarian Government and about one hundred aided schools. Fees are charged for this instruction. A reformatory in Singapore provides industrial instruction. In 1931, there were 338 schools, having an enrollment of 55,528. The colony also maintains Raffles College, founded in 1929 for higher education in arts and science, and the King Edward VII College of Medicine.

The administration of this Crown Colony is in charge of a Governor, assisted by an Executive Council composed of the General Officer commanding the Troops, the Colonial Secretary, the Resident Councillors of Penang and Malacca, the Attorney-General, the Treasurer, three official members nominated by the Governor and three unofficial members. There is a Legislative Council of twenty-six members. The municipalities of Singapore, Georgetown in Penang, and Malacca are administered by Municipal Commissioners appointed by the Governor. The Governor is also High Commissioner for the Malay States and Brunei, and British Agent for the states of North Borneo and Sarawah.

Malacca is one of the oldest European settlements in the East, and was under Portuguese rule from 1511 to 1641. In that year the Dutch obtained possession of it and held it until 1795. At that date it was captured by the English, who restored it to the Dutch in 1818, and finally regained it for the East India Company in 1824. Penang (the Prince of Wales' Island) was the first British settlement in the Malay Peninsula. The Sultan of Kedah ceded it to the East India Company in 1786, and Province Wellesley was added in 1800. The early history of Singapore is obscure until its independence in the thirteenth and fourteenth centuries. It was destroyed by the Javanese in 1377, and remained almost uninhabited until the British settlement in 1819. In 1824 the island was ceded to the East India Company in perpetuity. In 1826 the three Settlements were incorporated with headquarters at Penang. In 1830 they came under the Presidency of Bengal, and in 1836 headquarters were transferred to Singapore. In 1867 the control of the colony was relinquished by the East India Company to the Secretary of State for the Colonies. Cocos Islands in 1886, Christmas Island in 1889 and Labuan in 1905 were incorporated in the Colony, and in the Settlement of Singapore in 1900, 1903 and 1907 respectively. Labuan became a separate settlement in 1912.

The population has been drawn from all parts of Asia, Africa, Europe and America. Approximately fifty per cent of the population are Chinese. The population according to the census of 1931, was 1,114,012, exclusive of the garrison. It is distributed as follows: Singapore Island and Labuan, 588,172; Penang, Province Wellesley and Dindings, 367,-477; Malacca, 191,335; Cocos Islands, 1,142, and Christmas Island, 715. Singapore, the capital, has a population of 502,021.

Malay Peninsula, a long peninsula extending southward from Indo-China toward Sumatra. It begins at the head of the Gulf of Siam, and includes parts of Siam and Burma. Mountain ranges extend the entire length of the narrow peninsula, yielding valuable trees, gums and spices.

See MALAYA; MALAY STATES, FEDERATED; MALAY STATES, UNFEDERATED.

Malay States, Federated, a group of states at the tip of the Malay peninsula, under British protection. They comprise Perak, with an area of 7,800 square miles; Selangor, 3,150; Negri Sembilan, 2,550, and Pahang, 14,148, covering a total area of 27,648 square miles. The States are important in the production of cocoanuts, rice, rubber, tapioca, oil palms and pineapples. There is provision in Perak for the irrigation of 70,000 acres of rice fields, and the supplying of drinking water. Sugar, pepper, camphor and nepah are also produced. In the forests excellent timber abounds, as well as gutta-percha, gums, oils, resins and canes. Rubber and tin are the chief products. In 1931 there were 552,910 pounds of rubber produced, and 52,527 long tons of tin, of which these states are the world's chief source of supply. The Federated Malay States also produced 29,462 ounces of gold in 1931. There are many other minerals, but only coal, iron, arsenic, wolfram and scheelite have been found in workable form. In 1931, there were 368 tons of tungsten ore exported.

In 1931, there were forty-eight English schools, with an average enrollment of 18,309, and maintained or assisted by the Government; and 1,191 schools in the vernacular (Malay, Tamil, and Chinese), with an average enrollment of 69,946, under control of the Education Department. There are many Chinese vernacular schools. The Governor of the Straits Settlement is *ex officio* His Majesty's High Commissioner for the Federated Malay States. In each state, the government is under a native ruler assisted by a British Resident. The British protectorate over this territory dates from 1874. The federation dates from 1896. Perak, Selangor and Pahang are separate states; but the name Negri Sembilan means Nine States, which is the number incorporated in that confederation within the federation. A Federal Council has been maintained since 1909 to provide a joint arrangement of matters of common interest to the states.

The population, according to the census of 1931, was: Perak, 765,989; Selangor, 533,197; Negri Sembilan, 233,799, and Pahang, 180,111, a total of 1,713,096. There are almost twice as many males as females, due to the great number of Chinese and Indian immigrants. The population consists of 443,618 Malays; 711,540 Chinese; 379,996 Indians; 6,350 Europeans; 4,251 Eurasians, 150,113 other Malasians, and 17,228 others. The largest city is Kuala Lumpur, in Selangor, which has a population of 111,738.

Malay States, Unfederated, are five states situated in the Malay peninsula, under British protection. Their area aggregates 23,355 square miles. Each state is under a native sultan with a British adviser. Johore has been a British protectorate since 1885, and the other four were transferred to Great Britain by Siam in 1909. Rubber is the chief product, 308,918,400 pounds being produced in 1931. Rice and copra are important exports. The total population, according to the census of 1931, is 1,528,100. The Mohammedan religion prevails.

Johore has an area of 7,678 square miles. There are many rubber estates, good roads and navigable rivers. A causeway across the Straits of Johore connects this state with Singapore. The population in 1931 was 509,309, chiefly Malays and Chinese.

Kedah is on the west coast of the peninsula, north of Province Wellesley and Perah. It covers an area of 3,648 square miles. North Kedah produces chiefly rice, and South Kedah rubber, cocoanuts and tapioca. There is very good transportation over metalled roads, railways, by canal and sea. The capital is Alor Star on the Kedah River. In 1931, Kedah had a population of 429,645, chiefly Malay.

Perlis, just north of Kedah, extends over an area of 316 square miles. The chief products are rice, tin, and cocoanuts. There are guano deposits. Transportation is chiefly by metalled roads, gravelled roads and paths. The population in 1931 was 49,297, chiefly Malay.

Kelantan is situated on the east coast of the Malay Peninsula, with an estimated area of 5,713 square miles. The chief industry is agriculture. In 1931, there were under cultivation 120,000 acres of rice, 57,271 acres of cocoanuts, and 92,789 acres of rubber. Pepper, tapioca, sugar-cane and maize are grown for local consumption. A large part of the State is covered by a jungle which produces timber, resin, rattans and bamboos. Cattle, buffaloes, goats, sheep and poultry are raised. Gold, galena and tin are reported but not in payable quantities. Industries include silk-weaving, boat-building and brick-making. Betel-nuts, fish, copra and para rubber are also exported. The population in 1931 was 362,517. Kota Bharu, the capital, has a population of 14,843.

Trengganu lies on the east coast, between Pahang and Kelantan, comprising an area of about 5,500 square miles. The industries are similar to those of Kelantan, and the country is of the same general character. There are no railways, and communication with the interior is by rivers and native paths. The population in 1931 was 179,664, with a population of 13,972 in Kuala Trengganu, the capital.

Malden (*môl'dĕn*), a thriving manufacturing city in Middlesex County, Massachusetts, is situated on the Malden river, five miles north of Boston. Malden is the seat of many large industries, including one of the largest shoe and rubber works in the United States. Other manufactures include carpets, rugs, furniture, cotton and knitted goods, leather goods, boots, hosiery, cords and tassels, sandpaper and emery paper.

Among its notable buildings are Converse Memorial Hall, the Court House, the Y. M. C. A., and the Home for Aged Persons. Malden was first settled in 1640 and chartered in 1881. The population in 1930 was 58,063.

Maldive (*măl'dīv*) **Islands, The,** a group of coral islands lying off the coast of Malabar, 400 miles southwest of Ceylon. They extend southward about twenty degrees, and have an extreme length of 500 miles and an average breadth of forty-five miles. They are divided into seventeen groups, each group or atoll surrounded by a coral-reef, and the individual islands estimated to number 12,000, of which 600 are charted and 200 inhabited. Male, extending one mile in length and three-fourths mile in width, is the residence of the native Sultan of the Twelve Thousand Isles. The principal exports are coir, cowries, dried bonito fish, cocoanut, copra, tortoise shell and tropical fruits, and cereals. There are many fish and wild fowl. The Portuguese, French and Dutch have at various times asserted authority over these islands. At present they are a dependency of Ceylon. The population, according to the 1931 census, is 1,931, consisting chiefly of Mohammedans who are famed as navigators and traders.

Male Cell, in botany, the general name of the sperm or male gamete, which may take a variety of forms. The special use of the phrase, however, is in connection with the angiosperms, in which the cell which fertilizes the egg is unlike ordinary sperms in several particulars, and is usually called simply the male cell rather than sperm.

Malibran (*mä-lē'brän*), *Maria Felicita,* a famous operatic singer, was born at Paris, on March 24, 1808. She made her debut in London in 1825. Her fame soon spread over Europe. At New York she married M. Malibran, a French merchant. Later, in 1836, this marriage being dissolved, she married Beriot, a famous violinist. She died at Manchester, England, on September 23, in that same year.

Malines. See MECHLIN.

Mallard, a common wild duck inhabiting the Northern Hemisphere. It belongs to the group of river ducks, and is abundant in the Old and New Worlds. The head and neck of the male are bright green, from which it receives its common name of "green-head." It is the original from which most of the domestic ducks are descended. In the western part of the United States it frequents cornfields; in the southern Atlantic states, the rice fields. It is extensively hunted by the use of decoys, and its fine-flavored flesh makes it a favorite for the table.

Mallee (*măl'ė*) **Scrub,** any of several bushy Australian eucalyptus shrubs, which grow from eight to ten feet high, and form dense, impenetrable thickets. The mallee scrub will grow in almost pure sand, and through either frost or scorching winds. This species furnishes much of the eucalyptus oil of commerce. So characteristic is this dense brushwood, that the regions in which it is principally found, including Victoria, New South Wales, and South Australia, are known as the Mallee country, and the government of Victoria has appointed a Mallee Board to regulate settlement in the Mallee.

Mallein (*măl'ē-ĭn*), a poisonous compound derived from the organism that causes glanders. More explicitly, it is a sterilized filtered bouillon culture of *Bacterium Mallei,* which is the causative organism. It is used in veterinary practise as a means of diagnosing glanders. An injection of Mallein is made subcutaneously. If the animal is healthy, there is no reaction. If it is affected by the disease, the presence of the mallein will cause marked local swelling and a rise in body temperature.

Mallock (*Măl'ŭk*), **William Hurrell,** an English writer upon religious and sociological themes, was born in Devonshire, England, in 1849. His mother was a sister of J. Anthony Froude, the historian. He was graduated from Balliol College, Oxford, with honors. Mallock wrote a large part of *The New Republic* while still at the university, publishing it in completed form in 1876, soon after his graduation. He continued to publish works upon his favorite studies, among which are *Is Life Worth Living?; The New Paul and Virginia; Social Equality; Property and Progress,* a reply to Henry George; *Labor and the Popular Welfare,* and *Classes and Masses or Wealth, Wages and Welfare in the United Kingdom.* His first purpose in nearly all his writings has been to expose the fallacies of socialism, and his secondary purpose to show that science cannot supply such a basis for religion as will suffice for the needs of man. His writings are brilliant, sarcastic and humorous, and many of his novels have a doctrinal tendency.

Mallory, Stephen Russell, a United States senator, was born in Trinidad, West Indies, in 1813, the son of a Connecticut shipmaster. He settled in Florida with his parents in 1820, and was admitted to the bar in 1833 at Key West. He was appointed inspector of customs at Key West under Jackson. Stephen Mallory served as United States senator from 1851 to 1861. At the outbreak of the Civil War he entered the Confederacy and became secretary of the Confederate navy. After the war he was imprisoned for a year, and then released on parole. He was finally pardoned by President Johnson in 1867. He died at Pensacola, Florida, on November 9, 1873.

Malory, Sir Thomas. Malory's work, a series of prose romances on the life and death of King Arthur and the knights of the Round Table, is immortal, though little of the author is known. The work is named *Morte D' Arthur*. Scott says: "It indisputably is the best prose romance the English language can boast of." Malory aimed to give epic unity and harmony to the whole mass of French romance. Caxton's edition of the work was finished in 1485. In the preface to this edition we learn that Malory was a knight and finished the work in 1470.

Malplaquet (*mȧl′plȧ′kâ′*), a village in France, near the Belgian frontier, celebrated as the scene of the bloody defeat of the French under Marshal Villars by the British and Dutch under the Duke of Marlborough and Prince Eugene, Sept. 11, 1709. The allied armies numbered over 100,000 men, and the French army somewhat less. The loss on each side amounted to about 20,000 men.

Malt is made from barley by steeping the grain during about 80 hours, "couching" it until the seed germinates, which may occupy some 12 days, and then drying it in a kiln at a temperature which may vary greatly, but often is from 100° to 150°. See BREWING.

Malta (*ma̤l′tȧ*), an island in the Mediterranean, 58 miles south of Sicily. It is 17 miles long and about 8 broad, and covers 95 square miles. It belongs to Great Britain, and is strongly fortified. It is the headquarters of the British Mediterranean fleet and the chief coaling station for British vessels. There are several smaller islands as Gozo and Comino, connected with it, belonging to England. Malta is treeless, and has no rivers or lakes, water being obtained from springs; but the soil is very fertile. There are several good harbors, and numerous odd caverns hollowed out by the sea, some of them quite large. Trade is mainly one of transit; some 3,500 vessels enter and clear from the port annually, half of which are British. Wheat, potatoes, corn, barley, cotton and the southern fruits are the principal products. The language is a dialect of Arabic, with a mixture of Italian, though the higher classes speak English and Italian. There is a university, founded in 1769, with four faculties and 147 students. Malta also has 167 public schools, with 18,719 in attendance. The cathedral of St Paul, built in 1697, and the grotto of St Paul, where the apostle is thought to have lived during his three months' stay, as well as the Bay of St. Paul, commemorate the apostle's shipwreck on his journey to Rome. The church of Musta, modeled after the Pantheon at Rome, has one of the largest domes in Europe. The capital is Valetta (population 50,000). Malta was settled by the Phœnicians about 1000 B. C. The Greeks took possession about 700 B. C., the Carthaginians in 480 B. C , and the Romans in 216 B. C. Under the Romans Malta was famous for cotton-cloth, honey and roses. Malta went with the eastern empire when the Roman kingdom was divided. In the 5th century it was conquered by Vandals and then by Goths, and in 870 the Arabs came into possession, but were driven out in 1090 by Count Roger of Sicily. Finally coming into the power of Charles V, he gave it (1530) to the Knights of St. John, who fortified it, making it very powerful. In 1798 the Knights surrendered the island to the French; but the people rebelled and succeeded after a two years' siege in driving off the French with the aid of the English. The people preferred the rule of Great Britain to that of the Knights, and the Congress of Vienna in 1814 recognized Malta as a British dependency. Population 215,879. See *Malta Past and Present* by Seddall and *The Story of Malta* by M. M. Ballou.

Mal′ta, Knights of, were a military and religious order of the middle ages. They were also called the Knights of St. John and Knights of Rhodes, and belonged to what were known as Hospitalers in the Roman church, who were devoted to the care of the poor and the sick. The order was founded about 1048, in a hospital built at Jerusalem and dedicated to St. John the Baptist. The order gradually became a military one, sworn to guard the holy sepulcher and to war against unbelievers. The last stronghold in Palestine was Acre, which they yielded after a terrible siege by the ruler of Egypt and sailed to Cyprus in 1291. After the Reformation they declined in importance, and most of their lands were confiscated by the different European states. There are two or three branches of the order still existing, and two modern associations, one of which, the English Knights of St. John, was the principal founder of the Red Cross Society.

Mal′thus, Thomas Robert, an English clergyman and writer on political economy, was born at Albury, Surrey, in 1766. In 1798 he issued the work which made his reputation and by which he has since been known· *An Essay upon the Principles of Population as It Affects the Future Improvement of Society.* The leading idea was that, the population of the earth increasing steadily in geometrical ratio, the world must soon be over-populated; and that, unless means to check such increase be promptly adopted, the nations of the earth must soon be brought to the verge of starvation. He insisted that abstinence from marriage could alone keep down the threatened overplus of population, He himself married in 1805, and was the same year appointed professor of history and political economy in East India College at Haileybury. Malthus also published *Observations on the Effects of the Corn Laws, Principles of Political Economy* and *Definitions in Political Economy.* He died at Bath, Dec. 23, 1834

Mal′vern Hill, Battle of, the last of the battles of McClellan's memorable Peninsular campaign. The hill is situated near James

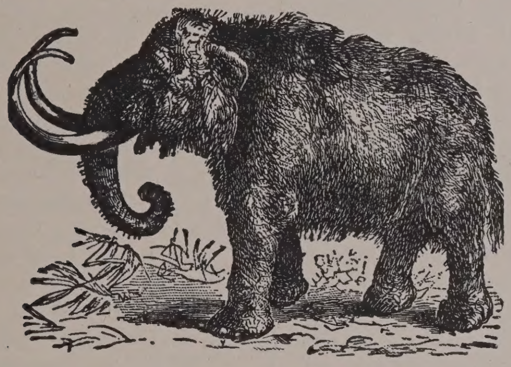
River, Virginia, southeast of Richmond. After the battle of Gaines's Mill, June 26, 1862, when the Federals were driven back with heavy loss, McClellan began a retreat to the James. His left wing, which was south of the Chickahominy, led the way through White Oak Swamp. His right wing, which was north of the Chickahominy, was with difficulty withdrawn across that stream, and, following through White Oak Swamp, was attacked by Lee at Savage Station and again at Frazier's Farm, where desperate battles were fought on June 29 and 30. Then McClellan reached Malvern Hill, on the north bank of the James, where he secured a strong position. Massing his artillery, he repelled the attack of the Confederates on July 1 with great slaughter. Next day McClellan withdrew to Harrison's Landing, and the "seven days' fight" was at an end. McClellan's losses, including killed, wounded and missing, were 15,849; Lee's were 19,749. But McClellan had lost the campaign, for the attempt to capture Richmond had failed.

Mamelukes (*măm'à-lŭks*), the Arabic word for white slaves, and especially the name of the slave kings of Egypt. They came from a body of slaves, brought in the 13th century from Asia Minor and the Caucasus to act as the mounted bodyguard of the sultan of Egypt. On the death of their master in 1250 they chose one of their own number his successor, and from that year to 1517 the Mamelukes ruled Egypt and Syria. There were 48 Mameluke sultans, often keeping the throne but a few years or months, in two royal houses, the Turkish and the Circassian Mamelukes. The Ottoman Turk conquered Egypt in 1517. The Ottoman pasha, who now ruled, allowed 24 beys to rule the provinces. These beys, all Mamelukes, soon got all the power, and the pasha became a cipher. Their last brilliant achievement was their desperate charge on Napoleon's squares at the battle of the Pyramids in 1798. Soon afterwards Mehemet Ali came to power, and, by two treacherous massacres in 1805 and 1811, blotted out the Mameluke princes, except a few who fled to Sudan. See S. Lane-Poole's *Art of the Saracens in Egypt.*

Mamma'lia, the highest class in the animal kingdom, including all those forms with breasts (*mammae*) by means of which they suckle their young. The group is a varied one, and contains animals ranging from the smallest harvest-mouse to whales nearly 100 feet long. They are all air-breathers, for even those forms living in the water, as whales, sea-cows and seals, come to the surface to breathe. The lungs and heart are in the thorax, which is cut off from the abdominal cavity by a partition—the diaphragm. All have a four-chambered heart, a complete circulation and red-blood corpuscles without nuclei. All possess hair at some stage of their life on some portion of the body. Even the young whale has hairs that disappear in the adult or are confined to the snout. This covering is variously modified; it may be fine fur, wool, long coarse hair, or developed into sharp spines, as in the porcupine, spiny ant-eater and others. The outer part of the horns of ruminants is believed to be modified hairs, and the horn of the rhinoceros is regarded by many anatomists as made of compacted hairs. The other parts derived from the outer cell-layer, as claws, hoofs, the plates of the armadillo, if not modified hairs are equivalent structures. The bony system is well-developed. The skull articulates by two processes with the vertebral column. There usually are two pairs of limbs, but in whales and manatees the hinder pair is lacking. The brain and sense-organs are highly developed. Most mammals live on dry land; the bats, however, have the power of flight; and other forms, as flying squirrels and flying lemurs, make long leaps through the air. Whales, sea-cows, seals and walruses live in the water. Squirrels and others live upon trees, and among the burrowers, belonging to this class, are moles, prairie-dogs, rabbits and others. An idea of the extent of the class will be obtained by naming the orders into which it is subdivided, and the common animals belonging to each order. There are three subclasses: ORNITHODELPHIA, DIDELPHIA and MONODELPHIA. The first contains a single order—the *Monotremata*, represented by the duck-bill and echidna of Australia. The second, likewise, contains a single order—the *Marsupialia* or pouched animals like the oppossum, kangaroo, etc. The third subclass is the largest and most important. It embraces 12 orders as follows: *Edentata*, toothless animals, like the armadillo, hairy ant-eater, etc.; *Rodentia*, the gnawers, including squirrels, hares, the mouse, rat, beaver and the like; *Insectivora*, the insect-eaters, like shrews, hedgehogs, moles and similar animals; *Chiroptera*, the bats; *Cetacea*, the whales and dolphins; *Sirenia*, the dugong and manatees, *Proboscidia*, elephants, the extinct mammoth, mastodon etc.; *Hyracoidea*, the conies; *Toxodontia*, an extremely curious group, containing some extinct forms — Toxodon and Nesodon — found in South America; *Ungulata*, a very important group of hoofed animals, containing the tapir, rhinoceros, horses, swine, camels, deer, cattle, giraffe, yak, goats, sheep, antelope, musk-ox and a few others; *Carnivora*, the flesh-eating mammals, as bear, otter, raccoon, badger, mink, dog, fox, hyena, tiger, lion, lynx, walrus, seal, etc.; and *Primates*, the highest order, embracing lemurs, monkeys, apes and man. See *Mammals, Living and Extinct* by Flower and Lydekker and Schmidt's *Mammalia.*

Mam'moth, a very large elephant-like animal now extinct. The bones of this animal are abundant in various parts of the world.

Some specimens have been found in northern Siberia in which the flesh, skin and other soft parts were preserved. When living, the animal resembled the Indian species of elephant, but was larger. The body was covered with a dense short wool of a reddish-brown color; besides, there was a covering of hair several inches long, intermingled with long black bristles. There also was a shaggy mane. This animal became extinct just before the beginning of historic times. It belonged to the latest epoch (Pleistocene) of geological time. The tusks probably were present both in males and females. They were curved, in some cases almost into a circle, and in the largest specimens discovered measured about 12 feet in length. The grinding surfaces of their great molar teeth were unlike those of any other elephant, having many more transverse ridges. They fed upon the shoots and cones of the fir and pine. Their geographical range was considerable. Besides those found in Siberia they were abundant in England, Central Europe and the northern part of America. Their teeth and tusks are so abundant as to supply a considerable amount of the ivory of commerce. Some of the islands on the coast of Siberia are said to be made largely of accumulations of their bones. See Haworth's *The Mammoth and the Flood.*



MAMMOTH

Mammoth Cave, The, situated in Edmonson County, Kentucky, 85 miles southwest of Louisville. The cave is about 10 miles long, but it is said to take over 150 miles of traveling to explore its many avenues, chambers, grottoes, rivers and falls. The main cave is only four miles in length, and is from 40 to 300 feet wide and 125 feet in height. Lucy's Dome is 300 feet high. Some avenues are covered with a continuous crust of the most beautiful crystals, and there are many stalactites and stalagmites. There are several rivers or lakes connected with Green River, outside the cave, rising with the river but falling more slowly. The largest is Echo River, three fourths of a mile long and in some places over 200 feet wide. The air of the cave is pure, and the temperature always remains at about 54°. See A. S. Packard's *The Cave Fauna of North America* and his *Inhabitants of the Mammoth Cave.*

Man, Isle of, in the Irish Sea, belonging to Great Britain. It has an area of 227 square miles, with a population 54,752, is 33¼ miles long and 12½ broad, and covers 145,325 acres, of which nearly 100,000 are cultivated. At the southwestern end is an islet called the Calf of Man, covering 800 acres. A chain of mountains stretches from northeast to southwest. The coast scenery is bold and picturesque, especially at Spanish Head, the southern end of the island. Large quantities of lead and zinc are mined and smaller quantities of copper and iron. The tailless Manx cat is the only animal peculiar to the island. The extensive herring and cod fisheries, cattle and wheat-raising are the leading employments.

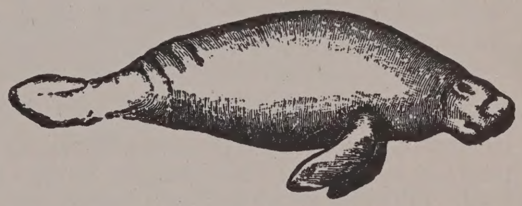
Managua (*mä-nȧ'gwȧ*), capital of Nicaragua and the seat of government, lies in a fertile district on the southern shore of Lake Managua. Population about 30,000.

Mana'gua Lake, at the head of which the city of Leon, once the boast of Spanish America, was founded in 1523, lies 12 miles northwest of Lake Nicaragua, with which it is connected by a small stream.

Manassas (*ma-năs'sȧs*), **The Battle of.** See Bull Run.

Manas'seh, the oldest son of Joseph. The tribe was given land on both sides of the Jordan. King Manasseh (B. C. 699-44) was a later king of Judah. He was taken into captivity, but restored.

Manatee (*măn'a-tē'*), an aquatic mammal, is found along both shores of the Atlantic in tropical regions and in the large rivers. Three species are known, and all go under the name of sea-cows. One lives on the western coast of tropical Africa, one on the eastern coast of South America and the third on the Florida coast. The South American form is the best known; it extends to the West Indies and the Gulf of Mexico, and possibly is the Florida species. It has a long body with a broad, oval tail. There are no hind limbs, but the front, flipper-like limbs are managed with much dexterity, and it was from this that it received the name of manatee. The skin is grayish in color with sparse hairs. The manatees are slow-moving, mild, inoffensive creatures, passing their whole life in the water but coming to the surface to breathe. They are not found in the high seas, like the whales, but live along the shores in bays, estuaries, lagoons and large rivers.

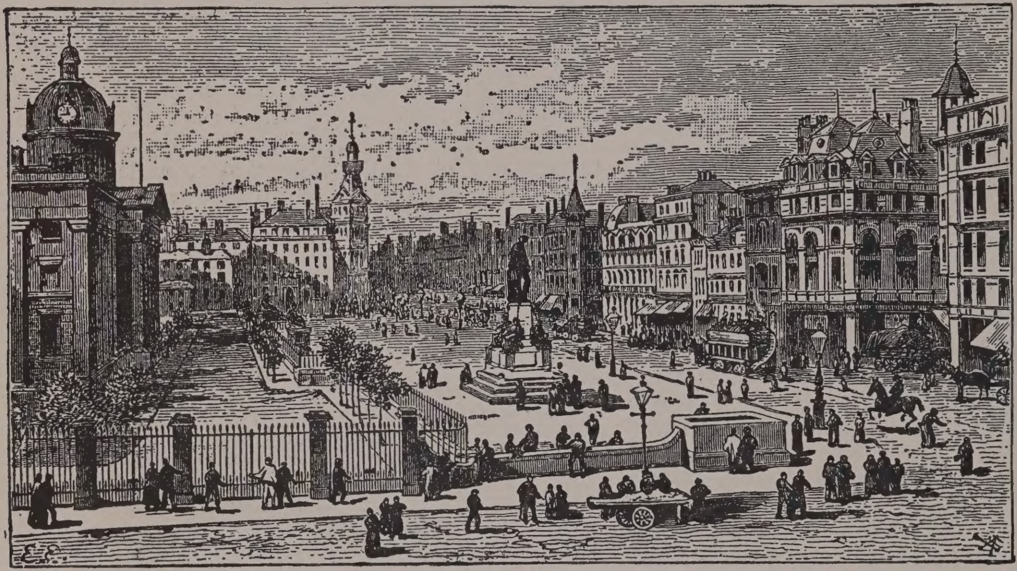


MANATEE

They live equally well in salt and fresh water, and ascend the Amazon to Peru and Ecuador. These mammals feed upon water-grasses and marine algæ. Most authorities to-day hold that their length is about eight feet. A soft, clear oil is one of the products obtained from the manatee.

Manchester, a city of Hartford County, Connecticut, is situated on the Hockanum River, eight miles directly east of Hartford. Its principal industries embrace silk weaving, silk dyeing, velvet weaving, neckwear, tapestry, upholstery fabrics, and the manufacture of soaps, scouring powders, friction clutches, machinery, machine needles, woolens, and electrical instruments.

Manchester maintains seventeen public grade schools, and two high schools, with a total enrollment (1930) of 4,698 pupils. There are fifteen churches in the city, three of which are Roman Catholic, and two are Methodist.



Manchester Royal Infirmary and Piccadilly from Queen's Hotel

The New York, New Haven and Hartford Railroad, the Hartford-to-Providence automobile-bus route, and State highway No. 3, enter the city. In 1930 the population was 21,973.

Manchester, a county and parliamentary borough of Lancashire, England, is situated on the Irwell River, about 187 miles northwest of London, and thirty-one miles east of Liverpool. It is connected with Salford, on the opposite bank of the river, by sixteen bridges as well as railway viaducts. Manchester is an important industrial city. It was about the middle of the eighteenth century that the factory system was first introduced in Manchester, a system where large numbers of men work together, in place of the older method of men working in their homes. In 1756 the Bridgewater Canal was constructed, which connects Manchester to the coal fields of Lancashire, and the salt mines of Cheshire, thus making an outlet to the sea. The construction of a great ship-canal in 1887-91 gave Manchester added importance as an inland seaport. Its principal industries to-day include cotton spinning, weaving and manufacturing, calico printing, bleaching, and dyeing. Silk and worsted goods are also manufactured here, as well as machinery, tools, paper, and chemicals. Manchester is one of the leading cities in the world in the textile industry.

In addition to its industrial importance, Manchester has accomplished much in beautifying the city itself. Among its many public parks is Heaton Park, which extends over an area of 693 acres. Manchester also boasts of many fine old buildings, the most outstanding of which are the Town Hall, one of the finest in the United Kingdom, and the Free Trade Hall which was constructed on the site and in memory of the victory won by the Anti-Corn Law League at the Peterloo Massacre in 1856. Here the Hallé concerts may be heard. Among the several libraries in the borough, is Chetham Library, which was founded in 1653 by Humphrey Chetham. The Christie Library at Owens College, and the Johns Rylands Library are among the other fine reference sources in Manchester.

Manchester is the seat of a bishopric (1847), and of a university which was founded in 1880. An excellent school of technology is located here. The Manchester Grammar School was founded in 1515. In 1931 the population of the county borough was 735,774.

Manchester, a city and the seat of Hillsborough county, New Hampshire, is situated on the Merrimac River, eighteen miles south of Concord, and fifty-six miles from Boston. For more than 100 years, Manchester has been an industrial community, and has developed a great diversity of industry and an abundant supply of skilled workmen. Its principal manufactures include, cotton goods, shoes, corrugated paper and wooden boxes, knitted goods, automobile tops, and truck bodies.

The city is served by the Boston & Maine Railroad, bus lines, and interurban electric lines. The Manchester Municipal Airport is situated just four miles south of the city. There are twenty-five public grade schools, and three high schools in the city as well as parochial and private academies. In 1930 the population was 76,834.

Manchukuo, an independent state created on March 1, 1932, by a Chinese Northeastern Executive Council. It is situated in what was formerly the northeastern part of China and covers an area of 460,383 square miles. It is composed of the Chinese provinces of Fengtien, Kirin, Hsilungkiang and Jehol. In 1932, following Sino-Japanese military action over the South Manchuria Railway, Manchuria set up an autonomous state. China maintained that the move towards independence was supported by Japan and appealed to the League of Nations. The report of the League Committee held Japan wholly responsible for the formation of the Manchu state and advised an autonomous government for Manchukuo subject to Chinese sovereignty, which would be established through direct negotiations between China and Japan. Japan, however, refused to abandon her policy and formally recognized the independence of Manchukuo on September 15, 1932. A protocol was signed between the two nations.

On March 9, 1932, Henry Pu-Yi, the former deposed boy Emperor, Hsuan Tung, was installed as regent or *Ching Cheng* of Manchukuo. A capital was set up at Changchun and the name changed to Hsinking. Henry Pu-Yi appointed a Cabinet of Chinese officials headed by Cheng Hsiao-hsu. The officials of both government and the army are Chinese, but behind each key position is a Japanese adviser. More than 600 such advisers dominate the governmental policies of Manchukuo.

Government. The Constitution of Manchukuo provides for a Cabinet or State Council, an advisory Senate, and a Legislative Council composed of 100 members. Legislative deputies are nominated by the Central Government and recommended by the provincial governments. The deputies serve for a term of three years. The duties of the members of the Legislative Council consist in endorsing all legislative bills and the State Budget. The first budget of the State was balanced at 113,308,055 yuan (the yuan being equal to about 30.5 cents). The first fiscal year ended on June 30, 1933.

On the second anniversary of the independence of Manchukuo, March 1, 1934, Henry Pu-Yi ascended the throne of Manchukuo as Emperor Kang Teh. Great celebrations attended the accession in Hsinking and in Tokyo. The entire Japanese Cabinet was present at a banquet at Manchukuoan Legation in Tokyo. Emperor Kang Teh, who was deposed during the Revolution of 1911, is an ambitious monarch. He declared that continued friendly relations are desired with Japan as well as with other powers. "It is our intention to go before the world, hat in hand, with head bared, to beg recognition. Our achievements in the realms of peace, trade and finance for the welfare of the people must automatically of themselves win foreign recognition."

Following the establishment of a constitutional monarchy on March 1, 1934, diplomatic problems at once demanded consideration both in Tokyo and Hsinking. The Japanese, having founded the buffer state and fostered its growth, expect preferential treatment from that state. In the protocol signed by the two nations in September, 1932, Manchukuo granted Japan the right to station military forces within its boundaries for the purpose of safeguarding its national security.

HENRY PU-YI © *Acme*

Emperor King of Manchukuo

One of the most distressing problems confronting the new monarchy is the Chinese Eastern Railway ownership, the solution of which will be an important diplomatic achievement for Manchukuo. The railway was built by Russia in 1896-1903. It has been managed jointly by China and Russia. It is 1,078 miles long. An attempt is now being made to sell this railway to Russia. Negotiations were begun in 1933, but were halted in the autumn of that year when six officials of Soviet Russia were arrested in Manchukuo. They were released on January 14, 1934, and negotiations were resumed in February with the Soviet Ambassador to Japan for the sale of the railway. The Soviet Government asks 200,000,000 rubles for the line. Manchukuo, however, is willing to pay only 50,000,000 yen for the railway. Manchukuo is especially anxious to remove all "vested interests" of the Soviet Government from its territory, and to operate its own transportation and communication facilities.

The attitude being displayed by this new state is being carefully watched by Japan, since Manchukuo, desirous of removing all foreign influences may adopt the same attitude towards Japan. Such an attitude would be dangerous to the South Manchuria Railway, an 800,000,000 yen Japanese investment, which is now governed by Japan. Japanese administration in Manchukuo has been of inestimable value to this new state. Its currency has been stabilized, communications have been extensively developed, its army, navy and police forces have become independent, and judicial reforms have been instituted, and transportation facilities unified. It is little wonder then that the Japanese Diet should be so watchful of all diplomatic and economic affairs within this constitutional monarchy.

Transportation. In March, 1933, the Manchukuo State railway system was brought under the control of the South Manchuria Railway. The capital stock of the railroad was increased and a ten-year program was outlined which provides for the construction of more than 200,000 miles of railway. An appropriation of 15,000,000 yuan was made for two years' work on such construction. Japan is intent upon retaining this railroad and thus keeping a restraining hold on the diplomatic and economic policies of Manchukuo. The Zone along the railway has been under concession to Japan. Vast commercial enterprises have been developed along this Zone in which Japan has expended more than 1,700 million yen (about $800,000,000). The taxes have not as yet been collected by Manchukuo. The Government of Manchukuo, however, has only recently planned to construct customs stations along this Zone which stretches over 400 miles from Dairen to Hsinking. Here the railway is joined by the Chinese Eastern Railway.

Manchukuoan Cabinet © *Acme*

The Cabinet Ministers of Manchukuo after attendance at a session in Hsinking.

The population in the South Manchuria Railway Zone is 352,097. This territory was obtained by Japan in 1905 at the close of the Russo-Japanese War as was Kwangtung, leased territory which covers an area of 1,336 square miles.

Agriculture. Manchukuo abounds in rich soil. From 1903-30 more than 12,000,000 immigrants entered this region from Korea (Chösen), Japan and China. The Chinese have since become excellent farmers. There are about 81,719,000 acres under cultivation in the state. Its principal crops are soy beans, wheat, millet, maize, rice, flax, and sugar beet.

Industry. Manchukuo has vast deposits of coal. In 1926 the Chinese Geological Survey estimated that Manchuria had a reserve of about 30,000,000 tons of anthracite, 128,000,000 tons of lignite, and 2,792,000,000 tons of bituminous. In the Fushun open-cut mines, which are owned by Japan, the production totals about 7,100,000 tons. The chief coal deposit in the Fushun mines is 150 feet thick. Fushun also has shale deposits. Oil found in Manchukuo is reserved for use by the Japanese Navy.

The greater part of Manchukuoan trade is carried on with Japan. China and the United States also supply the state with imports. The chief ports are Dairen, Antung and Newchang, which handle more than eighty per cent of the country's commerce.

Population. Manchukuo has a population of 34,074,974. The greater portion of the inhabitants are Chinese (33,238,000); Koreans number 629,235, and there is a Japanese population of 113,550. There is also a mixed Russian group of about 94,189 dwelling here.

Mandalay (*măn′dȧ-lā*), the capital of Upper Burma, is situated 410 miles north of Rangoon. It is in the form of a square, each side a mile long, and is surrounded by a wide moat and a wall. The most famous building is the Aracan Pagoda, with a brazen image of Buddha visited by thousands of pilgrims. The most important industry is silk-weaving. Mandalay was founded in 1860, and captured by the British in 1885. Since that date Mandalay has been the capital of Upper Burma. In the following year one-tenth of the city was destroyed by flood and fire. The gates of the city are surmounted by odd wooden towers. According to the census of 1931 the population of Mandalay is 147,932.